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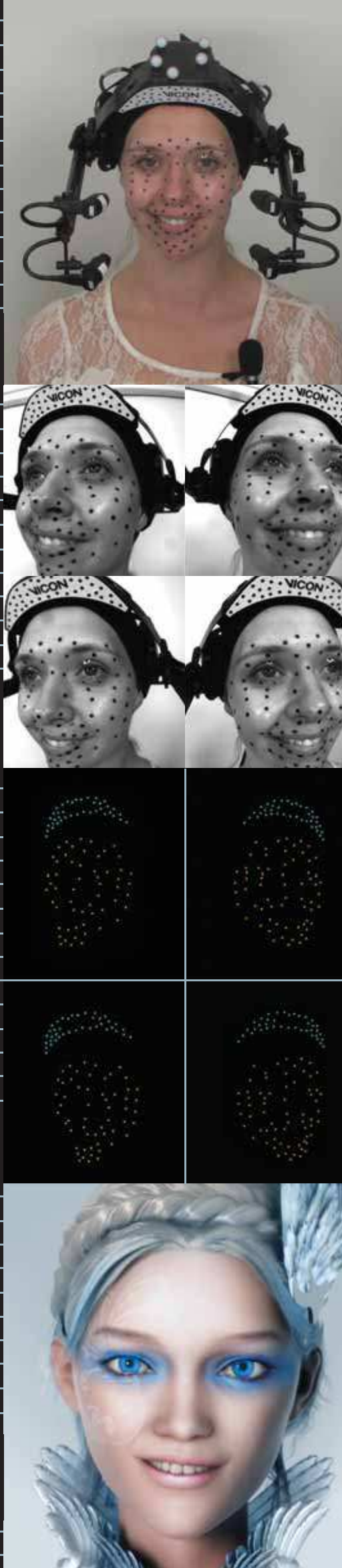
A World in Motion.

SET-UP

CAPTURE

3D DATA

ANIMATE



develop

ISSUE 143 OCTOBER 2013

EDITORIAL

A FOND FAREWELL

IT'S NOT THE easiest time to step aside as editor of *Develop*. Look through this very issue and you'll see what I mean.

GTA V is rubbing shoulders with a quirky Google Glass game. Iconic animator Aardman has granted us access to its games development department, and the workshops where it builds global IP from modelling clay.

Numerous high-profile technology companies are pushing their tools in exciting new directions. The progress, diversity, positivity and opportunity in the games industry evident today, and in this issue, demonstrates why holding the reins to the magazine has been such a pleasure.

But, after this issue, I will be stepping aside, handing over to our new editor, the brilliant James Batchelor. I'm delighted to say I'll still be involved as contributing editor with all the same contact details, so you haven't gotten rid of me that easily, but a new and deserving team member will capably fill my shoes. And likely turn up to your studio in smarter shoes than I ever did, having arrived on a more mature mode of transport than a thrashed old skateboard.

So all that's left is for me to thank you. Thank you for reading, and thank you for all the help over the years, including the unforgettable studio visits and interviews. Thanks especially to the contributors for their hard work and fascinating words.

The games development community is the most inspiring and friendly I know of, and the past five years have been a hugely exciting time to be involved.

There's many challenges, of course – to pen a news piece on Blitz's closure in my final issue as editor was utterly unpleasant – but five years at *Develop* has convinced me of one thing: the future of our industry is a great one indeed, including for those now seeking employment.

And so it is that *Develop* will continue as long as games development does, covering the remarkable work you all do, and, hopefully, contributing in some way. See you out there.



Will Freeman

will.freeman@intentmedia.co.uk

Will

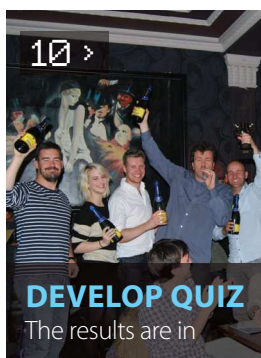
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THE INSIDE STORY OF GRAND THEFT AUTO V

Behind the scenes at Rockstar North, where a phenomenon was crafted

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DEVELOP QUIZ

The results are in

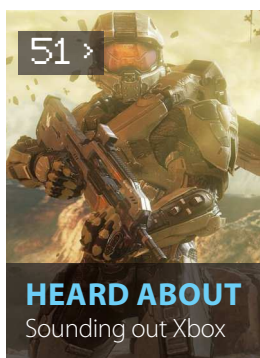
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MOBILE TECH

An in-depth guide

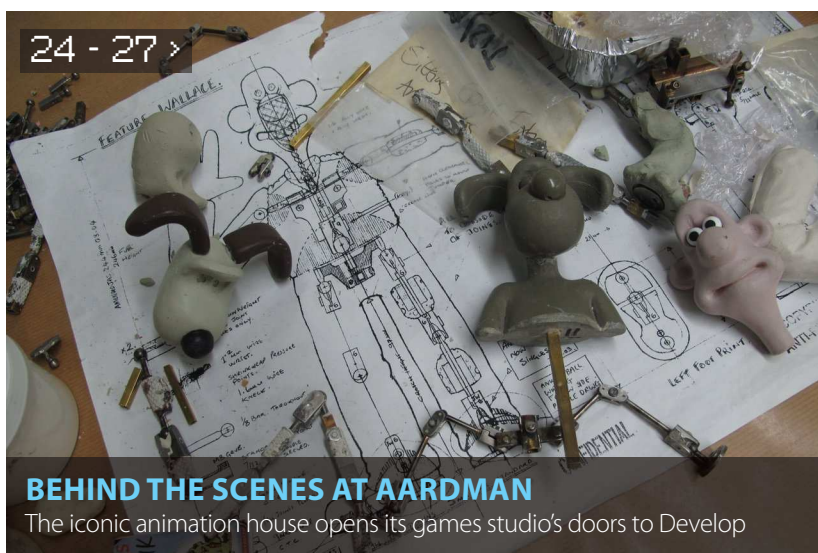
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HEARD ABOUT

Sounding out Xbox

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BEHIND THE SCENES AT AARDMAN

The iconic animation house opens its games studio's doors to Develop

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GOOGLE GLASS DEV

How one studio is tackling the tech

REGULARS

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Farewell to B

Stalwart UK studio closes after 23 years ● industry rallies to support staff, as new outfits form amidst storm of affection

by Will Freeman

LAST MONTH SAW the sudden closure of longstanding UK developer Blitz Games Studios, which ceased trading as a result of financial pressures.

While 175 staff lost their jobs on the day of the closure – September 12th – 50 were immediately offered work at a new studio formed by Blitz execs. The new outfit will work on two of the developer's existing projects deemed to be self-sustaining financially. Simultaneously, a concerted effort by the wider UK games industry began to secure redundant staff new employment.

With Twitter becoming a focal point for the sharing of available positions, within hours of the closure, a wave of studios throughout the UK called on former Blitz staff to get in touch about new job opportunities, including Rebellion, Sega Hardlight, Four Door Lemon, First Touch Games, Frontier, Playground Games and Mind Candy.

And new studios started by Blitz staff have already emerged, including Game Lab Social, established by former Blitz project directors Oliver Clarke and Steve

Stops. Pitched as a space for fostering creativity, the new company hopes to host workshops, on-site training and access to marketing, pitching and monetisation expertise for local developers. Meanwhile, developer Pitbull has opened a new Midlands operation and is hoping to employ former Blitz staff in many of the available positions.

WEATHERING THE STORM

"We have managed to weather numerous storms over the last two decades that have sadly seen the demise of many of our friends and colleagues across the industry, but the run of problems we've had to face over the last year is unlike any we've seen before," said

Blitz Games Studios co-founder and CEO Philip Oliver.

"Frustrations with clients,

the global economic crisis, and more than our fair share of simple bad luck have all conspired against us and we are no longer able to continue trading."

Blitz's history is a long and vibrant one, starting 23 years ago with twins Philip and Andrew Oliver establishing themselves as furiously productive and successful games makers, having established the iconic Dizzy the Egg IP. Their story is integral to the founding of the UK's Leamington Spa dev hub, which remains a vital part of the UK games making community to this day.

"We have done all that we can to make Blitz a success, and we have come frustratingly close in recent months," continued Philip. "Major clients have felt unable to commit to investment in significant projects, others have changed strategy whilst appearing committed, and others have been slow to commit at all – all of these things have continued to hurt our finances. We have also sustained the business for some time with our personal savings but even those reserves have now been exhausted." The studio's own IndieCity portal is also 'up for grabs' as a result of the closure, with a number of parties apparently interested in the purchase.

AN INDUSTRY REACTS

As a result of the closure, numerous industry figures new and veterans have expressed their sadness at the closure, demonstrating the huge affection in the UK games industry for the Olivers and their company.

"I was shocked and hugely

The Oliver twins, Philip and Andrew, co-founders of Blitz, who many recognise as vital to some 30 years of the UK game's industry's history



litz

saddened to hear of Blitz's closure," stated Charles Cecil, head of *Broken Sword* studio Revolution Software, speaking with *Develop*. "Founded in 1990, the same year as ourselves, Blitz was one of the pillar development companies which appeared to always ride the troughs. Passionate about games and the industry itself, Andrew and Philip Oliver are always

“Andrew and Philip were always sincere, open and human.”

Martin Hollis,
Independent

positive, always pleased to offer advice to their fellow developers, and to contribute to the industry whether through government or TIGA. They will bounce back, of course, and we wish the very best of success to them, to their former employees, and the new developer start-ups."

"[Blitz was] such a long time stalwart member of the UK games development industry, and one that was unusually outward-facing, and I am very surprised and sad to learn it is closing," independent developer Martin Hollis, famed for his roles as director and producer on the N64 hit *GoldenEye 007*, told *Develop*. "Andrew and Philip were always sincere, open and human, and I never knew any person to have a word against them. The business was business-like and I believe they managed

relationships and employees in the best possible way. It is sad to see such bad luck affecting so many in the UK."

Speaking with *Develop*, Tower Studios founder and former Sensible Software co-director Jon Hare expressed similar sentiments: "Blitz have traditionally adapted well to the transition of the games industry across the years, from small family company making original games to large company servicing many licences across a wide range of platforms. I will be sad to see them go."

THE NEW GUARD

Representing the Leamington Spa area's newer teams, Andy Wafer, CEO of 2012-founded developer Pixel Toys said: "It's disappointing, saddening and no doubt very stressful for those losing jobs. As such a large employer of talent the closure will impact the cluster in the short term. Blitz has been a positive force in the local gaming community, driving IGDA events, mentioning initiatives, indie support and knowledge sharing in and around Leamington."

"However, through the transition into a new leaner company many jobs are likely to be saved," he added.

Cecil also asserted that Blitz's closure acts as 'a warning bell' for the whole development sector: "Once again, [it] raises the question of why the European Commission should have blocked the government's tax credit proposal."

Visit the *Develop* website for a detailed history of Blitz, and more news on new studios forming from the closure. ■



Game Republic turns ten

UK dev sector's largest regional body enters second decade

NORTHERN ENGLAND AND Yorkshire games industry network Game Republic is this month celebrating ten years supporting developers in the region.

Established in 2003 by proven Yorkshire games makers including Martyn Brown of Insight For Hire, Revolution Software's Charles Cecil and Bryan Reynolds of Rockstar Leeds, Game Republic strives to give its members a voice in the global games business, and encourages the sharing of information, resources and work.

"Game Republic wouldn't be here without the incredible support from our games companies, affiliates, guest speakers and universities, such as Sumo Digital, Rockstar Leeds, Platform Expos, Team17, Four Door Lemon and the University of Huddersfield," said Game Republic managing director Jamie Sefton (above). "I'm enormously proud of the games development scene here, which I believe is one of the strongest, friendliest, most creative and passionate in the world. The proof is in the amazing games made in Yorkshire and the north such as *Worms*, *Broken Sword*, *Call of Duty*, *Grand Theft*

Auto, *Oddworld* and more that continue to raid the global charts."

Presently functioning as a private company, Game Republic has over 60 members spanning Yorkshire, the North West and North East of England, which are granted access to monthly business meetings that serve to connect developers in the region with the likes of Microsoft, Sony and Amazon.

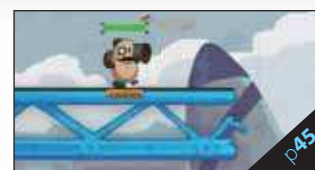
"I attended the very first meeting for the network in Bradford, before the name Game Republic even existed, so to have seen it change and grow over the years to what it is now, is a testament to those involved," stated Stewart Gilray, CEO of Just Add Water. "The network has allowed the smaller of the dev teams in the area to get incredibly valuable access to some of the industry vanguards and knowledge. Here's to the next ten years."

The Game Republic network is set to celebrate its birthday on Thursday, October 17th in Leeds, with an invite-only event for current members, supporters, previous speakers and others from the industry. www.gamerepublic.net



develop iPad

Videos are available within the iPad Edition of **Develop** on iTunes and the Browser-based Digital Edition, which can be accessed at develop-online.net



THIS MONTH: Grand Theft Auto V Autodesk debuts its indie-focused Maya LT technology Unity's new 2D tools and workflows in motion

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DEVELOP DIARY

Your complete games development event calendar for the months ahead



LONDON GAMES CONFERENCE

November 13th
London, UK

www.londongamesconference.com

This year's LGC will feature talks from renowned industry figures, including Charles Cecil, Shahid Ahmad, David Reid and Miles Jacobson.

Speakers from Google, Twitter, Twitch TV and more will also join this stellar line-up to discuss the next generation of video games.

Taking place just before the launch of Sony's PS4 and Microsoft's Xbox One, expect the excitement to have reached fever pitch. For tickets, email Sara.Mather@intentmedia.co.uk.

OCTOBER 2013

CLOUD GAMING USA 2013

October 7th to 8th
San Francisco, USA

bit.ly/17AFp7R

F2P SUMMIT - AUTUMN 2013

October 10th
London, UK

www.f2p-summit.com

GAME MARKETING EUROPE 2013

October 14th to 15th
London, UK

bit.ly/10RFNu8

GAMECITY 8

October 19th to 26th
Nottingham, UK

www.gamecity.org

APPS WORLD EUROPE 2013

October 22nd to 23rd
London, UK

www.apps-world.net/europe

BRAZIL GAME SHOW 2013

October 25th to 29th
São Paulo, Brazil

www.brasilgameshow.com.br

NOVEMBER 2013

GDC NEXT 2013 & ADC 2013

November 5th to 7th
Los Angeles, USA

www.gdcnext.com

BLIZZCON 2013

November 8th to 9th
Anaheim, USA

www.blizzcon.com

LONDON GAMES CONFERENCE 2013

November 13th
London, UK

www.londongamesconference.com

ME AWARDS 2013

November 14th
London, UK

www.mobile-ent.biz

SOCIAL GAMBLING & GAMING 2013

November 21st
London, UK

bit.ly/19z4MZA

LAUNCH CONFERENCE 2013

November 21st to 22nd
Birmingham, UK

www.launchconference.co.uk

DECEMBER 2013

GAME CONNECTION EUROPE 2013

December 3rd to 5th
Paris, France

www.game-connection.com

GAME DISTRIBUTION JAPAN 2013

December 3rd to 4th
Tokyo, Japan

bit.ly/1bvzyG8

GAME QA & LOCALISATION 2013

December 10th to 11th
San Francisco, USA

sanfran.qalocforum.com

THE MONTH AHEAD

A look at what October has in store for the industry and beyond



OCTOBER 3RD IndieCade 2013.

A key tastemaker in the indie games scene, check out the latest gems at this LA show.



OCTOBER 11TH The Fifth Estate.

Benedict Cumberbatch stars as Julian Assange in Hollywood's take on the Wikileaks saga.



OCTOBER 19TH GameCity 8.

The Nottingham festival will feature debuts of new indie titles, an open arcade and more.



OCTOBER 25TH

Batman: Arkham Origins.

Join a younger Dark Knight as he tracks a crime lord who's placed a bounty on his head.



OCTOBER 4TH Zelda: The Wind Waker HD.

The most underrated console Zelda gets a new chance to shine on Wii U.



OCTOBER 11TH Beyond: Two Souls.

David Cage's next esoteric story stars Ellen Page as a troubled girl with paranormal powers.



OCTOBER 20TH World Statistics Day.

Get your stats on and show your colleagues how well you know your facts and figures.



OCTOBER 25TH

Brazil Game Show 2013.

Over 150,000 people are expected at South America's largest games expo.



OCTOBER 10TH F2P Summit.

Another chance to learn about this rapidly changing business model from industry experts.



OCTOBER 15TH

Global Handwashing Day.

Listen, Gee, we just tryin' a keep from being sick. Why you gotta be OCD?



OCTOBER 22ND

Apps World Europe 2013.

Neon Play, DeNA and Wooga headline this conference on the future of mobile gaming.



OCTOBER 26TH

QGCon 2013.

The first ever conference for LGBT issues in games takes place this week in Berkeley, CA.



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8.00pm - 11.00pm

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Game Music Connect a resounding success

Welcoming audio experts and novices alike, this brand new event shone a light on the sterling work of video games composers

A CULTURAL COMPLEX in London that has played host to performances of classical music, spoken word and literary recitals was fitting for the premier of Game Music Connect, a new convene exploring the art and science of video games music.

Curated by audio specialist and *Develop* columnist John Broomhall, and admired British composer James Hannigan (*Harry Potter*), the one-day event tackled the art of composing for games, the technological shifts that are changing it and the issues that face all composers who choose to provide their creative skills to the video games industry.

Joining Broomhall and Hannigan at the Southbank Centre's Purcell Room were several of the most prolific names in games composing today: Martin O'Donnell (*Halo*), Jesper Kyd (*Assassin's Creed*), Jason Graves (*Dead Space*), Richard Jacques (*James Bond 007: Blood Stone*), Joris de Man (*Killzone*), Paul Lipson (*Kinect Disneyland Adventures*) and Alastair Lindsay (*Wonderbook*).

Games would arguably be lost without the power of music. Its ability to create feeling and make the player's presence in the gameworld that much more believable is what these composers are devoted to. But how does a composer keep the music fresh across an experience that can last upwards of 20 hours?

INTERACTIVE MUSIC

The answer is interactive music systems – a topic which fascinated the assembled composers, educators and students that *Develop* spoke to. Jason Graves demonstrated how he approached the score for Crystal Dynamics' *Tomb Raider* reboot. The developer, he said, wanted a score that would give the franchise an identity for a new era, while avoiding repetition in-game.

"I wanted it to be really dynamic, so I proposed to do the entire score in my studio," Graves explained.

Outside of the cinematics, he said *Tomb Raider's* in-game music was composed of a series of layered "stems and strings", which are individually triggered depending upon the player's actions and their proximity to enemies. For instance, as Lara sneaks up on unwitting foes, the quiet clang of cymbals plays. If she performs a stealth kill players hear a sudden crescendo of stings, and when combat becomes heavier still the beat of drums is added to the mix.

"Every single combat event in the game was individually scored," said Graves, who used orchestral samples and recorded the percussion live at his home studio.

Graves produced close to four hours of original music, without loops, and added that Crystal Dynamics was able to stretch it even further because of the interactive layering system.

Graves said scoring *Tomb Raider* has "changed the way I think about music," particularly as this was the first time he'd worked so closely with a games developer.

"We need to create music that can reach beyond the US, and touch the hearts of anyone who experiences our story."

Martin O'Donnell, Bungie

REPEAT PERFORMANCE

Much to the audience's delight, the composers discussed intimately what life is really like for them as creatives and contractors during the conference's afternoon sessions.

Lipson, Microsoft Studios audio director (read more from him on page 53), advised aspiring composers that how they conduct themselves professionally can be more important than the music they write.

Graves said showing your commitment by travelling to meet a developer in person makes a big difference when looking to secure commissions.

Kyd set off roars of laughter with his response to a question about generative music: "You can't tell a computer to have a rough childhood."

And O'Donnell regaled the audience with his tales of working with music legend Paul McCartney on the forthcoming *Destiny* soundtrack, as well as its overture, *Music of the Spheres*.

"Game music has a truly global audience. For *Destiny*, we need to create music that can reach beyond the borders of the US and touch the hearts of anyone who experiences our story," he said.

From tales of record-breaking at Skywalker Sound, which drew a round of applause from the audience, right through to Hannigan's call for game music to be recognised more widely in the mainstream, Game Music Connect was an event filled with insight and inspiration.

And the event should be back, as the mood in the room was overwhelmingly in favour of a repeat performance. ■

www.gamemusicconnect.com



Game Music Connect took place at the Southbank Centre's Purcell Room



Composer James Hannigan with audio commentator and host John Broomhall



Richard Jacques, Jesper Kyd and James Hannigan offered advice for budding composers



Sony's Alastair Lindsay and Microsoft's Paul Lipson give the platform holders' views on audio

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Shahid Ahmad



Bruce Daisley



Ross Brockman



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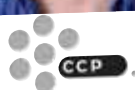
Miles Jacobson



Charles Cecil



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Simon Little



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THE DEVELOP QUIZ

The scores are in from the most recent Develop Quiz, meaning it's time to run down the results from the industry's wildest networking get-together. Here we bring you the highlights from our tri-annual gathering of the sector's sharpest minds



The winning Dead Good Media team celebrate securing the Develop Quiz Trophy

IN THE DAYS before this magazine went to press, a wealth of the UK development scene's brightest and best came together in London to do battle at the three-times yearly Develop Quiz.

Dead Good Media emerged victorious in the test of knowledge of topics both gaming-related and from beyond the realm of the development industry.

In what is becoming a Develop Quiz tradition, a close finish saw Dead Good Media secure 53 points, while both Side and Creative Assembly reached 52 points, meaning a tense tie-breaker for second place, in which CA triumphed.

Defending champions Firefly Studios managed joint fourth place this year.

Teams battled it out over topics including 'Celebrity Deaths', 'Console Close-Ups', 'Video Game Hats', 'Fictional Companies from the Movies' and 'Gaming Acronyms'. Thanks to all the teams, and the Quiz's round sponsors UKIE, ARM and Dead Good Media for making the night yet another great success.

The next Develop Quiz will take place in late-January 2014. If you want to join in on the fun, book now and contact Kathryn.Humphrey@intentmedia.co.uk to avoid disappointment. ■

THE SCORES

Want to know the results of the recent Develop Quiz? Here they are in full



1.	WINNERS: DEAD GOOD MEDIA	53
2.	CREATIVE ASSEMBLY	52
3.	SIDE	52
4.	INDIE ALL STARS	51
4.	ARM	51
4.	FIREFLY STUDIOS	51
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12.	CREATIVE PERSONNEL	39
13.	GALLANT CLOUD STUDIOS	34
14.	WAVE STUDIOS	32
15.	OMUK	30

Variable declarations



//COMMENT: BUSINESS

Investor dealings: common mistakes

Nick Gibson offers essential advice on securing external funding

IN SUCH A competitive market in which new studios are launching at an unprecedented rate, the ability to secure third-party funding can be the key differentiator between a fast start and slow organic growth, and even between a successful and unsuccessful venture.

One of the roles that Games Investor Consulting performs is helping investors and other funding bodies decide what games companies and projects they should back and which to avoid. We spend quite a lot of time on this, having conducted well over 120 professional commercial assessments in the last three years alone. Unsurprisingly, the funding proposals, mainly from UK games studios, have spanned the full gamut from good to awful. Sadly, a great many fall into the latter, so this month I want to discuss how to avoid some of the most common mistakes made by studios in presenting their investment case to third parties.

KNOW YOUR TARGET MARKET

A surprisingly large number of studios have gaps in their knowledge about the market they are targeting; some quite clearly do not understand it at all. Games genres, platforms and demographics can be mixed almost infinitely to yield large, small and non-existent addressable markets. Funders need confidence that the studio not only understands what their target market is, but also how large and accessible it is. Research and demonstrate this.

KNOW YOUR COMPETITORS

In such a crowded market, 'unique selling propositions' are critical. The two most common mistakes made here are the attempts to fudge the USPs and the failure to discuss the studio's

points of differentiation at all. These days it is very easy for funders to search for competing products and services, and yet some will declare they are unique in spite of ample evidence to the contrary. Thoroughly investigating and honestly explaining the competitive positioning of the studio's projects not only allows the funder to recognise where the studio sits in the market, but can inform the studio about where the gaps in the market are.

GETTING TO MARKET

With so many markets now open to self-publishing, many developers understandably opt to avoid third party help in getting to market and instead go it alone. We often see the assumption that a game will sell itself, its superior quality creating a self-sustaining viral ripple that delivers millions of players. The reality is that acquiring customers is incredibly challenging and can be very expensive; most games fail to raise themselves above a modest player base. These risks need to be recognised in any funding proposal and countered with comprehensive and innovative solutions.

BUSINESS MODEL

This is the most common area of weakness we see, and mistakes come in many forms. Here are a few: Firstly, providing an overly-simplistic or erroneous financial model (or not providing one at all) won't endear you to funders, most of whose professional lives revolve around spreadsheets, financial analysis and forecasts. Secondly, make sure any assumptions you make are backed up by precedent data. So often we have seen forecasts based on unrealistic expectations, for example 15 per

cent conversion rates, 75 per cent 30-day retention rates or inexplicably massive new user flow. These need to be conservative – so beatable – and able to stand up to scrutiny. Another common error is revenue model choice. As one frustrated angel investor complained to me recently after seeing dozens of UK studios: "Why do UK developers have no interest in making money?" Funders are ultimately after a return on investment, which they will not achieve with a weakly executed, overly benign or inappropriate revenue model.

FUTURE FUNDING

Studios may well need multiple rounds of funding to get their great opus to market. This is not in itself a problem, but the failure to recognise or quantify this necessity is. Provide information about how much more is needed, where you hope to secure the funding from and when it is needed. Ignoring or obfuscating this simply adds to the funders' risks.

For many seasoned studio heads, most of the above points will be obvious. However, a surprisingly large number of less experienced funding applicants get them wrong, focusing instead on their more demonstrable technical or creative skills. Whether you're a £25,000 grant-seeker as a £5 million VC funding pitcher, following these rules of thumb – or finding someone to help you do that – could make the difference for your investors and thus your project's funding. ■

Nick Gibson is a director at Games Investor Consulting, providing research, strategy consulting and corporate finance services to the games, media and finance industries.
www.gamesinvestor.com

//EXTRA CONTENT ONLINE



"Experience is key to getting a job in the industry. Now most people will say 'I didn't get a job because I had no experience' and 'How am I supposed to get experience if I don't have a job?'"

Dan Kenny, Eyesodic Games



"Harnessing the power of games for alternative purposes for education, training or social change is

something we're very passionate about, and one sector which we believe will benefit is health care."

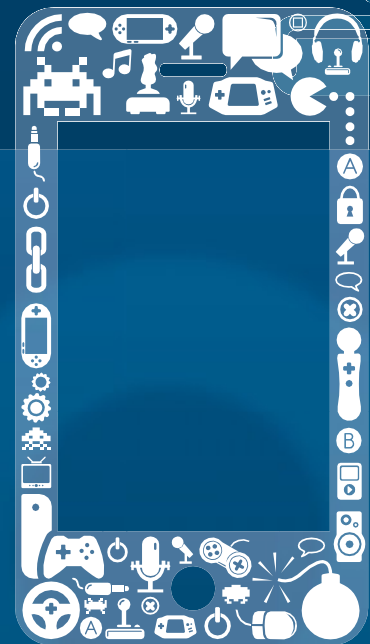
Phil Stuart, Preloaded



"There's been a great deal more meet ups springing up across the UK, which is fantastic. If you're thinking of starting one up, here's some tips and general things to think about when you take that plunge."

Sam Mottershaw, GameDevNorth

To see all of our reader blogs visit: www.develop-online.net | Email craig.chapple@intentmedia.co.uk to contribute your own blog

The Amicus logo, featuring the word "amicus" in a white, lowercase, sans-serif font. Above the letter "i" is a small, stylized orange and yellow circular icon. The logo is set against a dark blue background.

How to make
a game for
Google Glass
p22



Crime pays

A rare look behind the scenes at the studio that built GTA V, p14

Aardman's
move on
games dev
p24



Region
spotlight:
Frankfurt
p28





Victory. Variety. Valuable. Versatile. Vitality. There are many ways to describe the studio behind *Grand Theft Auto V*. But here it is from the mouths of the people who have led the team. **Michael French** visits Rockstar North

THE VISION

LESLIE BENZIES HAD always dreamt of being a rockstar.

But a talent in coding led him not to headline Glastonbury, but to secure a job on a bigger, global stage. He started as a coder at DMA Design, then the man running the *GTA III* team, and now, fittingly, a Rockstar – president of its prized North studio in Edinburgh.

Today, Benzies is one of the four-piece present when a *Grand Theft Auto* is initially conceived. It's him who sits down with his partners at Rockstar Games, co-founders Sam and Dan Houser, plus Rockstar North art lead Aaron Garbut, to flesh out the initial idea.

While Rockstar hit the big time, that core process remains unchanged game after game. It's part of the reason why these blockbusters have kept their flavour through each instalment.

For *GTA V*, that discussion started as *GTA IV* was wrapping up – almost five years ago – although the latest game has been in full production for just three years.

"It comes from the idea first," Benzies tells us in his office at the studio.

"Where is it going to be set is the first question. Then that defines the missions; you're doing different things in LA than in New York or Miami. The map and story get worked up together, and the story is a basic flow of how it works out so you can layer the missions in.

"For this one we were down in London and the idea of the three characters popped up

again. We'd actually considered it for *San Andreas* because there were three cities, but it didn't work from a tech point of view because the three characters need three times as much memory, three types of animation, and so on.

"We throw stuff in the pot, and the good stuff stays and the bad stuff disappears – there are a lot of gatekeepers at the studio, who ensure not much of the chaff makes it through. Some of the good ideas, like the three characters, stick around."

"GTA III was good, if unexpected. Being able to actually make it was a shock. The fact it all works and was good fun was a surprise."

Leslie Benzies, President

ROCK STAR THINKING

Everyone likens *GTA* to the movies by virtue of its cinematic qualities, but Benzies tells us it isn't a movie, it's more like an album.

Each *GTA* is produced by the same set of lead band members – visionaries, auteurs, extremists – who are in turn supported by some of the best technicians in the business.

When Benzies recounts the *GTA* story briefly, it almost sounds like a poetic rock 'n' roll blur.

The studio was formed in Edinburgh after Rockstar Games bought DMA Design, built as a team dedicated to making *GTA III*. The game was taking the series into unknown 3D open world territory, with a vivid interactive city to seamlessly explore.

We all know the broad strokes of what happened next: a global phenomenon, a super-franchise with a string of lucrative sequels, a studio with the most enviable hit-machine reputation on the planet.

But it didn't seem like any success was assured at one point, says Benzies.

"*GTA III* was good, but... it was unexpected. Being able to actually make it was a bit of a shock to us. The fact it all works and was good fun was a surprise. A lot of people in the studio at the time said we couldn't do it."

Vice City swiftly followed, published just a year later. "It was over so quickly," recalls Benzies. "It was a nine month production. Forget the 'experience' – it just happened. We were on such a high from *III* we just ran through it."

San Andreas came next. It was the most successful single-platform game ever, and the most praised. "It was good, it combined all the stuff we had done so far. It felt the most cohesive and the scale was huge," says Benzies.

Then *GTA IV*... "*GTA IV* was dark times," Benzies confides, switching tone. "We'd been Hot Coffee-d. We were thinking 'We make video games, and [the US authorities are] doing this to us?!'"

Meanwhile, the transition to the then next-generation meant calling in help from other Rockstar studios to help finish the PS3 version



of the game. Rockstar North rose to the challenge, though – and *IV* was another smash hit, another commercial juggernaut.

“Our darkness showed in *IV*, and we realised that,” says Benzies. “So the DLC lightened it up a bit. *Gay Tony* especially was more flamboyant and bigger. The expansions added more energy.”

Each signature Rockstar North game has been a reflection of its teams’ emotions and experiences; an innovative debut, a swift follow-up, a third game gorging on excess, then a difficult fourth album, and so on.

“Yes, it is a reflection of us, like music,” says Benzies. “Or a book, or a film – for some of us some parts are more reflective than others, maybe,” he says.

GTA IV’s saga of two brothers who move to America and clash head on with its agonising culture might speak to how Sam and Dan Houser felt as *GTA* came under fire, perhaps.

Letting the games do the talking like this is partly why Rockstar’s prize studio has a bit of a mystique.

Although the studio has done more interviews and press than ever this year, *Develop*’s intrusion into the studio – they never have press actually visit – is a rarity. But really the team is just too busy making its creation to be on a constant PR trail for it, says Benzies.

“The game always comes first,” he says. The dream of screaming fans at Wembley when playing in a band during his youth is one thing, but Benzies doesn’t seem to be in the job for personal media exposure. “And anyway, Dan [Houser] does a lot of it because

he’s funny and articulate. We’re not. We write the other story – the code story.”

It’s almost humble to the point of stubbornness. As the creator of the world’s most prominent, most adored, most notorious game franchise, we expect or demand some arrogance.

But there is none when *Develop* visits Rockstar North. It is early August and the game is nearly done, and the studio is

“I don’t know if people know this or not, but there’s a huge amount of psychology behind the entire thing.”

Leslie Benzies, President

peaceful but busy. There is a monitor on every desk with *GTA V* running. Benzies’ office has three of them on the go, plus a fast-moving screen tracking the proprietary BugStar QA tech the studio uses.

As many people in the studio as possible are playing and checking the game when we visit. These are the rehearsals, if you will, before the game takes to the stage, before *GTA V* is handed over to the tens of millions of people that bought the game in its first 24 hours on sale.

Rockstar North dedicates an almost unnatural level of time to the details, and refines the gameplay experience constantly.

“I don’t know if people know this or not, but there’s a huge amount of psychology behind the entire thing,” says Benzies.

“We don’t just go ‘Here’s a mission, off you go’. We spend a lot of time, make a lot of graphs and work out how difficult something is, what the reward is, how you might be feeling after that mission.”

GRAND THEFT AUTEURS

Those efforts have shown in the work itself, and the results, be that revenues or plaudits. Rockstar North hasn’t had two encores, but three, four, five... And while *GTA* has stayed successful and of its type, the games market has changed around it dramatically. Lowercase R rockstars are a dying breed. Does Benzies ever have any concern that all that success may fade? Or that the console business, where most of North’s success lies, is vanishing?

“Of course, we think about it. But you have to just reign it back in.” More humility, more focus on the end result.

Benzies says there is one hunger that will never vanish amongst the world’s consumers: “a demand for quality entertainment”.

“People want to be entertained. Just look at TV. *Game of Thrones* – people love it. It’s good, but not brilliant. But to some people it’s the only thing on TV.

“Same goes when you’re sat on your iPhone twiddling around looking for apps, ▶

Rockstar North’s GTA V is already a global phenomenon, making \$1bn globally in three days – the biggest launch for an entertainment franchise ever



Develop visited Rockstar North in August just as *GTA V* was finished and work for *GTA Online* ramped up

and there's lots of rubbish on there. And they've stopped taking risks in Hollywood. Just look at film now, a lot of it is mediocre because they've stopped taking risks."

Benzies says the launch period for the *GTA* games are so enjoyable because the team gets to see how involved the audience gets.

"The excitement I get when I would buy a new album from my favourite band and place the speakers at either side of my head and have it blast into my ears... that's the enjoyment I hope others get. To be immersed, and to help people indulge in that escapism, that's what I look forward to."

'STAR POWER

Rockstar North, and Rockstar Games in general, has always fought for a level of autonomy and freedom from its owner Take-Two. The studio sets its schedule, "whatever is right to make the game we want to make" says Benzies. It's something that we point out is quite different from any other publisher-owned games team.

"We will never ever go 'Ooh, there's an avenue for revenue!'. If any of us say that... we'll go do something else. Everyone here, we sat at home aged 11 playing these games obsessively, we dreamt about making them, and here we are. I do this every day and it's my job. A dream job."

Rockstar's virtual independence, he adds, is what gives it the freedom to spend so long on polishing its games.

"That last five to ten per cent of work on the game makes a huge difference. This level

of perfection is not seen or understood in the majority of the industry. We can all make a car drive down a street in a game, but can you do it in style? Everyone's got characters that are walking around but can they *walk*?"

"We won't be doing things every year in a cycle. A year just isn't long enough to do this job. It might have been on the old consoles, but not on this."

There's some interfacing with publisher types, but only to inform Rockstar's bigger

“The last five to ten per cent of the work makes a huge difference. This level of perfection is not seen in the majority of the industry.”

Leslie Benzies, President

decisions – there's no production by accounting here. "Obviously money is in there somewhere. There is a guy who tells us our download stuff makes this much and our disc stuff makes this much. But that's the depth of it. That helps us decide if we'll do download packs to rerelease on disc."

"But really... we'll make what we want. No, wait, don't print that: we'll make what people want, and that's the truth."

What happens now that *GTA V* is finished? "*GTA Online*."

The innovative new mode – debuting weeks after the main game – is being released as we go to press. If the game is an album, *Online* takes the music on tour.

Benzies says the studio will be reorganised to support it, with a core team operating *Online*. Some staff will take well-earned holidays. Others will carry on with other work.

And when will Benzies, the Housers and Garbut reform to talk *GTA VI*? Is there even a *GTA VI* yet?

"We've got about 45 years worth of ideas we want to do," Benzies laughs. "We don't know what *GTA VI* will be, but we've got some ideas. *GTA Online* is the focus right now. There ain't no rest between finishing *V* and then *Online*. Plus we have some other things – stuff, DLC, I don't know how to describe it exactly – that we'd like to do, and we'll pick the right ones."

There seems little doubt that, when the team get ready to storm the stage again, history will repeat itself.

THE STUDIO

OUR TOUR OF the studio takes us to Andy Semple next. He has been with Rockstar North since its founding in Edinburgh, as studio operations and director. At first he was overseeing a group of 25. Now it's a team of over 360.

"Since day one until now, yes, it's been quite the journey," says Semple.

He's underselling it at first. Like many Rockstar staff he's a little daunted and a bit

modest when you make them think back about how far they have come. But he elaborates: "The team is larger, there is more organisation, more process and order to manage the complexity."

Somehow, though, through all that growth, Rockstar North feels intimate when *Develop* visits. The layout is almost completely open, although spread across a few floors, there are no rooms or sections that keep vehicle people away from level designers.

It's not lost on *Develop* that this studio, like the games it creates, is very much an open world of its own.

Semple explains: "We're here because of the game, and the people are core to making the games and how we run – and their relationships are key to that. If they aren't collaborating and communicating, it doesn't work. Art has to talk to code, the props people have to talk to the level designers. Sure, there's more people, and the roles have become more specialised, but we've made sure to keep it open."

"I think all of that is reflected in the game – everything is so seamless and connected because of the way it is made. We don't see it any other way. The investment of effort we put in – creatively, emotionally – you just cannot afford to isolate sets of people."

It's very different from other studios of equivalent stature or scale. But the huge silos of studios at other publisher run operations, the vast campuses owned by the superpublishers, says Semple, are 'probably the antithesis of everything we do'.

That reflects itself in how the team conduct themselves. Sure, there's line management, and a structure, and teams with responsibilities, but questions about who tells who what to do are treated like they are almost irrelevant, archaic.

"We don't have all that management side of things – we are still all connected with the staff, whether it's directly or those people with their leads," says Benzies.

Ideas from any member of the 360-strong team can rocket through the building and into the game, he adds: "It doesn't matter who you are – we recently had a guy come in as a tester on *GTA Online*, and a few weeks later he's doing some deep stuff, full-time, super important."

"If they are good ideas, that is. If they're shit we're not going to do them."

TAKING LIBERTIES

Good ideas and good judgement helped Rockstar North's stature not just grow in the industry but amongst its sister teams.

In the latest generation, it has become a safety net almost for sister projects, having a huge hand in finishing *Red Dead Redemption*, *LA Noire* and *Max Payne 3*.

This has actually evolved so much, say Benzies and Semple, that now 'production' of each giant Rockstar game isn't just done by one studio – but all of them working together.

"That's the way we work now – everyone works on *GTA*, or *Red Dead*, and so on, then we move on to the next thing," says Benzies.

"Now that it takes 1,000 people to make a game, that's a requirement. But we don't want 1,000 in one place."

Is it 1,000 people making *GTA V*?

"It's probably more, much more."

"And that's because of the size of the thing, we are modelling at such a minute detail. Once upon a time the car models have four moving parts. Now there are 15 alone in a car's retractable roof. The detail is ten, twenty times greater than *GTA IV*, so it takes ten, twenty times more people."

"We've been blessed with more power on these machines, so we continually have to push it – plus these guys are freaks. When they see a convertible's roof moving back, the artist is excited by it, and that's the kind of people we like to have working here. Isn't that how all the great things on the planet exist, because someone thought something was cool?"

Semple says that the now global production process also seriously widened the Rockstar North talent base.

"There is a broad range of skills at the company," supported by the business' shared tech. "Rockstar is a very connected company. That's probably different to other studios or publishers. No part of the game is being worked on that other teams don't know about."

HARD WORK PAYS OFF

Although everyone at Rockstar says that this huge scale – both within its games and the team(s) that make them – has been the biggest change over the years, North itself hasn't suffered.

Its leaders say that retention is high, with few departures.

"I think we run a fair place – work hard, get rewarded," says Benzies. "Some people here started as testers and are really senior now. If you have good ideas, they get in the game. Everyone can be who they want to be – and it shows."

"Our turnover is low," adds Semple. "People do leave, but by and large that can be personal reasons for relocating or wanting a change." People stay, because "we empower them to

“The drive comes from wanting to not only honour our previous titles, but better what's gone before. That's how we make games.”

Andy Semple, Studio Director

know that there's a level where they can make a difference. That's more important than any hierarchy."

What North expects in kind is dedication.

That doesn't necessarily mean crunch but Semple is direct: "Making this kind of game with all its ambition is hugely rewarding but also demanding and difficult. It requires a certain level of energy and talent to get through that. There is an investment in the game from the people that make it. No one wants to sell it short and subsequently will ensure to make it the best it wants to be."

"Everyone is acutely aware of what we are working on, how unique and special it is – and the push and drive comes from wanting to not only honour our previous titles, but to better what has gone before. That's just how Rockstar makes games. It's what our ▶





Over 360 staff currently work at Rockstar North's Edinburgh office – when it was founded it started with just 25



fans expect – and it's a reputation we are proud to maintain. It's an attitude that everyone who joins us needs to understand."

The games themselves are testament to the fact North attracts people prepared to give it their all, and many perhaps at a stage in their lives where they *can* give it their all. The bar is high, but the studio management work hard to support and reward that effort. A lot of the North staff have worked on multiple *GTA* titles, CV credits money can buy.

"If you're going to make anything decent, you have to work hard. NASA puts spaceships on the moon – they didn't do that by working six hours a day," quips Benzies. "So my point is that you have to do the work."

Benzies is talking about commitment and passion. Not crunch, which is about fatigue. "When there is too much work, then you address it. The games industry is a place where to work you have to love games, and when people love something they put the time in."

"Making a game is like making an album, a film and a spaceship all at once."

And the end result, an interactive experience like *GTA*, demands its audience listen to that album, watch the film and fly the spaceship all at once too.

RISEING STARS

The cumulative force of striving for perfection, however, is talent. Rockstar North is home to 360 stars of the games industry – and it wants more. While there are lots of experienced staff, the team has all worked keenly to find good colleagues.

Says Semple: "We've had graduates that have really impressed those older hands, and it's where those two sides meet that you really benefit."

The impression, just looking around at the mix of faces, is that this is what's helping the team remain eager and fresh.

At the end of the day, it seems to be talent that really matters to Semple. His biggest regret isn't a lack of media profile for the

studio specifically – versus the acres of words written about its creation – but things like missing out on helping with this year's *Dare to be Digital*. He and Rockstar North have been a partner on it for years, but completion of *GTA V* took precedent in 2013.

"Some of the brightest developers we have had came from that competition. We'd love to do more there, and give back to help create a thriving Scotland and UK games community. Time is always a problem for us – we'd love to do more but we end up having these massive games in our day job," he jokes.

“We’ve had graduates that have really impressed those older hands, and it’s where those two sides meet that you really benefit.”

Andy Semple, Studio Director

Our conversation with Semple turns back to how all of this – a talent hotbed, focus on perfection – afforded North independence.

To some in that still-big world of other publisher-run studios, that might sound like lunacy, but having someone tell Rockstar North what to do would likely be, says Semple, "the biggest risk of all."

THE TECH

THE STUDIO LEADERS will tell you that the last five per cent of making a *GTA* – the polish – matter just as much as the first 95 per cent. But you don't get anywhere without decent technology.

And it's Rockstar North's technical director Adam Fowler and associate technical director Phil Hooker that have been in charge of the

enviable, if daunting, and bespoke technology that powers the worlds of *Grand Theft Auto* and other Rockstar games.

Everything in the *GTA* games – apart from stalwart tools like NaturalMotion Euphoria, Scaleform and Bink – is built using in-house streaming tech and game engine.

Fowler has been at the company for 20 years, back when it was DMA Design, starting out on *Lemmings 2* for the SNES. It was him who teamed up with Benzies and art lead Garbut to devise streaming technology, an innovation that made modern *GTA* what it is.

"Streaming is the backbone of everything we do," says Fowler, who was the original architect of that game and its technology.

"We made a major leap of faith that we could do it – and luckily we did. At that point we knew we had a fairly large environment, and this vague idea we'd load it all in the background," he says.

But there was huge disbelief that the team, then just a part of DMA Design, would ever get it running. "It was a huge risk," says Benzies, who recalls where the idea first came from. "We saw a game that had a CD running, streaming footage, but with polygons over the top – so we thought 'What if that was footage of you driving around and it was a car overlaid?' Adam's a genius, he just ran off and did it, but everyone else in the studio thought we were nuts."

"And we didn't really know it would work out in the wild. Sure, we had it running on dev kits in the office, but they weren't retail machines – for all we knew the game would wear the home consoles out with all that disc movement. That makes you shit yourself. Without that tech there wouldn't be *GTA*. We needed it to run."

So powerful and instrumental was the innovation, says Fowler, some of the lines of code 'have probably survived from *GTA III* into *V* in some small way'.

TOOL'S GOLD

Today, the tech principles are still the same when it comes to how the streaming works in



the newer GTAs, and it is important “everyone at the company understands how it’s structured,” says Fowler.

But the volume of assets and material has changed over time. “On *GTA III* the game was just streaming geometry and textures from the disc. World descriptions, collisions and animations would be in system memory.”

Hooker, who joined Rockstar North in 2005 as an AI programmer before leaping up the ranks to a more senior role, adds: “The assets now are so big that pretty much everything is in a streaming state. When the game is running, it has loaded in the immediate area around the player, plus mission objects and so on, and the nav mesh for AI.”

Streaming is used to really stretch the systems in the game, and contribute to the realism and detail in the game world.

“The time between *IV* and *V* has really allowed us to stretch the consoles and within that time work out how each of our systems can be made optimal,” says Hooker. “So it’s not just running faster, but making each system better too.” The results are clear on-screen in *GTA V*.

ENGINES OF CHANGE

Aside from keeping up with the scale of the projects, the other major change at Rockstar North has been implementing a whole new proprietary engine. The team switched from Renderware to building an engine on Rockstar San Diego’s RAGE suite. North took this collection of components and turned it into a general engine which all the studios use, adding its proprietary audio engine too.

As part of the vast 1,000-strong trans-Atlantic effort that is a Rockstar Games title, the technology plays an important part bringing it all together.

Max Payne 3 actually beat *GTA V* to market with the latest version of the engine on show.

“As we moved onto *V* it was decided that our framework would be a basis for all the studios’ projects,” says Fowler. That was a decision driven by North, which was already

acting as Mr Fix-It on games like *Red Dead Redemption* and *LA Noire*, and understood intimately how the open world oeuvre works.

“One of the major challenges has been the growth of the team, and the growth of the team across multiple studios – and we’re pretty much using all the studios, and they are in different timezones,” says Fowler.

“It’s taken some getting used to, but has given us some excellent results.”

Hooker actually thinks the global collaboration has greatly improved Rockstar Games’ thinking power.

“Streaming is the backbone of everything we do. Everyone at the company understands how it’s structured.”

Adam Fowler, Technical Director

“We have a real Rockstar Games programming community now. We feel like one big virtual studio.”

And what’s so surprising here is that they’ve cracked it. Rockstar North just doesn’t know how to make the most immersive game, or the most lucrative, or the most praised – but the one that makes good of the most expansive production scale. The

“The truth is that this is a requirement of the project,” says Fowler. “There is no way you can snap off part of the game, hand it to a studio in another country and say ‘OK, you guys go do that part, see you in six months’.

“We need daily or weekly communication, we need to be talking, because everything interacts with everything else.”

This again leads back to the point that it’s the games that Rockstar wants to make

which dictate its set-up, not the other way around: “We make technology to make a game, not for the sake of making a technology,” says Fowler.

Hooker adds: “Our games demand a certain kind of technology. We’ve looked at third-party tech, but we would only pick something that can do more than what we think we can achieve. Plus, we have very specific requirements, from the amount of memory use to the level of control we can have.”

Fowler points out how this leads back into the original *GTA III* streaming innovation: “A lot of these engines aren’t designed with large streaming worlds. Back in the day we were rewriting chunks of Renderware to get that working.”

The technology in *GTA* is almost the least visible part of the production, yet the most crucial. Critics are dazzled by the environment, and praise the content – few mention the rendering, or overall slick performance.

“Good,” says Fowler.

“It’s our job to make that not visible,” adds Hooker.

Both have a beaming pride that their achievements play the ultimate part in completing the *GTA* illusion – that it is real.

THE NEXT GENERATION

With lots of speculation about what Rockstar’s games would look like on PS4 and Xbox One, we ask Hooker and Fowler what they make of the new machines.

But Fowler says he’s only been thinking about the current gen, and after that will be focusing on *GTA Online*, which to him is “almost a separate *GTA* game”.

It feels as if the technical thrill for them isn’t advanced computational power to make *GTA* look nicer, but the chance to add more to the *GTA* world, which is what *Online* promises.

Says Fowler: “The main technical requirement from *Online* has been in terms of back-end. That, plus the idea that you are creating your own character: everything



you have done is tracked and measured, and we've had to get the right scale server back end to support that."

When we ask North president Benzies about next-gen tech, he answers with so much praise for what Fowler, Hooker and their colleagues have done that it feels almost rude to try and look beyond their PS3 and 360 achievements.

"I am excited about next-gen, the more power you get as a developer is brilliant.

"But we're doing this. *V* is our focus. And to me *GTA V* looks next-gen. We've pushed this as far as it will go – it won't give you any more. Our game is a 'next-gen' title on current gen."

THE ART

WHERE DO YOU start when it comes to making a game the scale of *GTA V*? With a map. Not a design document, or a 'product road map' but a literal map.

And Aaron Garbut, art director at Rockstar North, is the man who plots the course.

Garbut is one of the four who devise the basis of each *GTA*, and a long-time colleague of Rockstar North president Leslie Benzies.

"Back at DMA Design Aaron was sat on the other side of a bank of filing cabinets – he was fenced off from us. But one day I caught a glimpse of his screen and he was typing in these texture coordinates. It was unusual to see an artist with his style that had a full understanding of the technical side of the game too. So we kind of stole him on to our project, which was *Silicon Valley* for the N64."

Space Station Silicon Valley included some of the hallmarks, like switching between vehicles in a 3D world, that would appear in the team's next project – *GTA III*, which they naturally flocked towards, gazumping the 2D *GTA* team, given their technical and 3D art prowess.

Back then, Garbut was one of six artists working on the PS2 title. Today, he oversees over 150 at Rockstar North doing art for the game – and more around the world.

GRAND DESIGNS

When making *GTA*, it is Garbut's pre-production that sets the tone. And it starts small.

"We do a lot of Googling and StreetView scoping," he says. "And some of us – Sam, Dan, Les and I – tend to meet up in the places we

“We end up spending four years in this virtual place. We drive around it more than the places we actually live.”

Aaron Garbut, Art Director

are being inspired by and drive around those places and have random chats.

"After that we have six to eight people on the design for around nine months to a year. At that point we have a pretty solid blocked in map. We treat the cities like a sculpture and make sure

that perspectives down streets look right. And we also make sure that it has the areas we need – both in terms of missions and as a city.

"After that we build up the team, and will take more people over to places like LA."

Back in the PS2 days, the whole studio would decamp to the destination, but the sheer scale of projects these days means the pilgrimage is done by more senior staff. But it's still a big chunk of them.

"We also have a research team in New York now. They were really good with *GTA IV*, and on *V* they have liaised with film crews to scout locations," explains Garbut. "We would take each individual city block and set down a very detailed guide to what it would look like, set StreetView coordinates, and then the location scouts would take photos of the specific places."

He admits the process might seem a bit back to front to some: "We design a world that we think is fun and just try to include as many interesting locations as possible. So we come up with ideas that we think will work well for the missions that will be created later."

"We go through lots and lots of iteration. We get a map and get to a point where you can drive around. Then the level designers get in there and that adds more voices to the mix in terms of what is working and what isn't."

"We end up spending up to four years in this virtual place, we drive around it more than the places we actually live so we really know what is right and what isn't, what's out of place and is perfect."

One of the tricks this method has taught the team is the ability to change tone quickly



through a city, encapsulating neighbourhoods and switching territory atmospheres within the space of a few city blocks - things that in real-life "take place across a stretch of ten miles".

The design of the map dictates missions, and Garbut and co-devise places that feel right for the gameplay - "and we encourage mission designers to take advantage of that - but we'll move things around if the story or missions demand changes".

The environment is constantly being refined up to deadline - when *Develop* visits in August, Garbut says 'It's still happening', although most tweaks are more subtle at this point.

WORK OF ART

That's a short history of what is a vast, layered process in building *GTA*'s world.

Garbut has also had to get a handle - like Benzie, Semple, Hooker and Fowler have - on how the franchise has grown, and taken its workforce into the thousands, and demanded gigabytes of art assets.

"The thing with a game like this, moreso than *GTA IV*, is that the scale of the thing is so big that we have many layers of stuff to look through - missions, cut scene locations, random characters, the character switching transitions and so on and so on. We have made sure to get every area of the world up to a certain quality level. We've hit a higher plateau across everything than ever before with *GTA V*."

Garbut is keenly aware that this also has the potential to demoralise artists, who might fear being trapped in a factory line. "You used to have so much control, and you got to own

something - so we've tried to keep that in some way."

On *GTA IV* it seemed the solution was to divvy city sections between artists. "We kept the same principle of giving someone an area of the map to have ownership over. There's a lot of positives to that process - people are accountable and they have real input. But we also found that there is a lot of variety, because artists have strengths and weaknesses.

“The game is a product of so many people we don't always feel comfortable being out front, saying words on each other's behalf.”

Aaron Garbut, Art Director

"On *GTA V* we broke that process up a bit, and moved artists around so they had a chance to contribute in different ways. It's given us a real consistency of quality, rather than pockets of excellence."

This more finely spread collaboration also helps when the team is 150 strong, otherwise the management overhead is too much.

The added layer of *GTA Online* is also, Garbut jokes, a 'cushion for your crushed dreams' if you're an artist: "Because if a section you built isn't used in the main story, don't worry.

Someone else, a player, will make that a location for an iconic *GTA* shoot out."

Ultimately, whether in a small team or a big one, Garbut has tried to create an environment that empowered staff in some way: "Every part of the game is up for grabs - nothing is locked down. We don't get too hung up on what we've decided - if something has to change, we change it."

SEEING STARS

Garbut hasn't worked at another studio, so can't comment on what he and his colleagues have cultivated might compare to elsewhere.

But as our day at the studio wraps up, it's clear to us he's a great example of the lasting connections amongst the staff, a collection of people who know how lucky they are, and don't want to question the wonderful nature of their situation, they just want to work hard at maintaining it.

What does he make of Rockstar's 'mystique'?

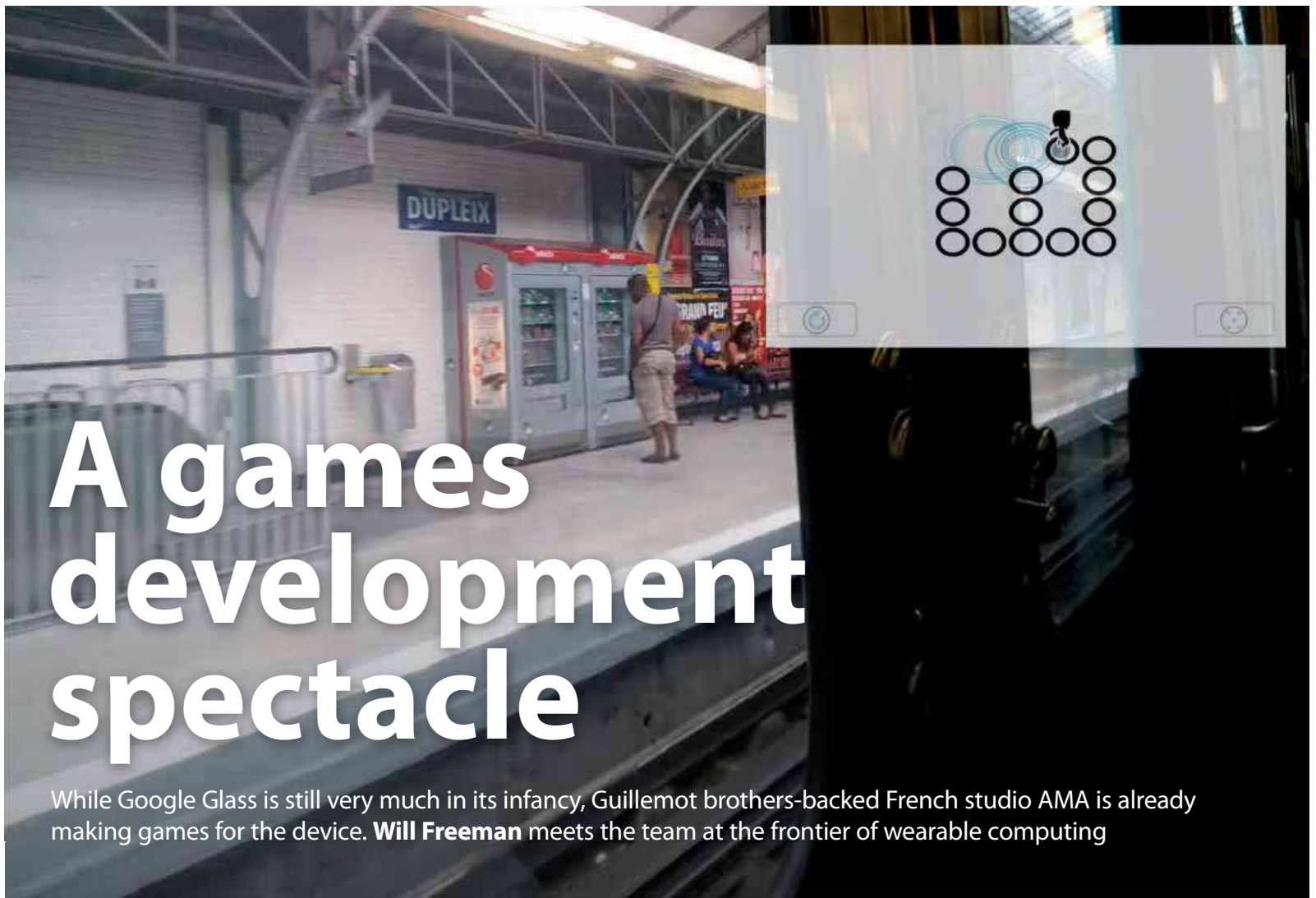
"The thing we have talked about in the past is that the game is a product of so many people, we don't always feel comfortable being out front, saying the words on each person's behalf.

"Even this conversation is strange because even though I have worked on all the *GTA* games there are lots of people here at the studio that have done a lot of work on it too. So it's difficult to put a figurehead on that," he adds.

"Really, we just focus on the game. As soon as we finish this, we start thinking about the next one - we just want to make games.

"And the games say more about us than any of us could." ■

Rockstar North's wide open plan office is designed to encourage collaboration and communication amongst its staff



A games development spectacle

While Google Glass is still very much in its infancy, Guillemot brothers-backed French studio AMA is already making games for the device. **Will Freeman** meets the team at the frontier of wearable computing



AMA's first Glass game *Escape* (main image) and Glass-sporting team members Andrei Urucu and Guillaume Campion (top-to-bottom)

SINCE GOOGLE'S GLASS was unveiled in 2011, the impact it may have on gaming has been the subject of much imaginative speculation.

The public's thirst for wearable gadgetry has been fuelled by concept videos showing a walk to work reimagined as a first-person shooter and commentators predicting bold new AR-based genres. But what is the reality of making a game for the Glass, where widely available game-specific middleware is but a thing of fancy, and even getting to hold the hardware remains the reserve of a chosen few? And how relevant is wearable tech to the future of games development?

One studio that is closer than most to knowing the answer is AMA, the French developer of Glass game *Escape*, which enjoyed much attention at this year's GDC Europe and Gamescom.

The game is by necessity a simple creation; something of a hybrid of arcade icon *Frogger* and tabletop classic peg solitaire. *Escape* is controlled through Glass' touch sensitive side panel, and offers just a glimpse of what might be possible with hardware you can wear.

Escape's status as the first Google Glass game is difficult to establish when the hardware is yet to enjoy a true consumer release; BrickSimple's *GlassBattle*, for example, was shown before *Escape*, but 'release date' rarely means much on tech still in development.

What does matter is that AMA has made a Glass game, and that puts them in extremely limited company. Indeed, their unit is one of only a handful in Europe outside of Google's laboratories. What's more, along with *Escape*,

they have another three Glass games and app prototypes underway.

WEAR NEXT?

"Wearable technology is by itself very exciting," offers AMA's head of production Guillaume Campion. "And this is just the beginning. Google Glass is a great platform to start with. Even if the design and the interface are very new and innovative, the hardware and the fact that it runs on Ice Cream Sandwich are pretty common.

Working on such a new device is definitely the kind of challenge we look forward to when choosing to work in this industry.

Guillaume Campion, AMA

"This is really a key point that allows us to focus on what is major, [for example], the user interface display. As a games developer, we love to brainstorm about new gameplay, new game mechanics, so working on such a new device is definitely the kind of challenge we look forward to when choosing to work in this industry."

Campion's comments give just a glimpse of the attitude that secured AMA early Glass access. Sat down to discuss making games for

the hardware, he is immediately focusing on what comes after Glass. But the team is equally modest.

Ice Cream Sandwich may be familiar territory for many developers, but knowledge of common SDKs and APIs are not all that is needed to make a game. That's especially true when the hardware offers as unusual a combination of inputs as touch sensitive arms, an eye-level camera, voice recognition, a gyroscope, an accelerometer, a magnetometer, ambient light and proximity sensors, and visuals delivered through an optical head-mounted display. But, insists AMA senior programmer Andrei Urucu, beyond challenges around the unusual 'screen' and controls Glass presents, little troubled the *Escape* team from a technical perspective.

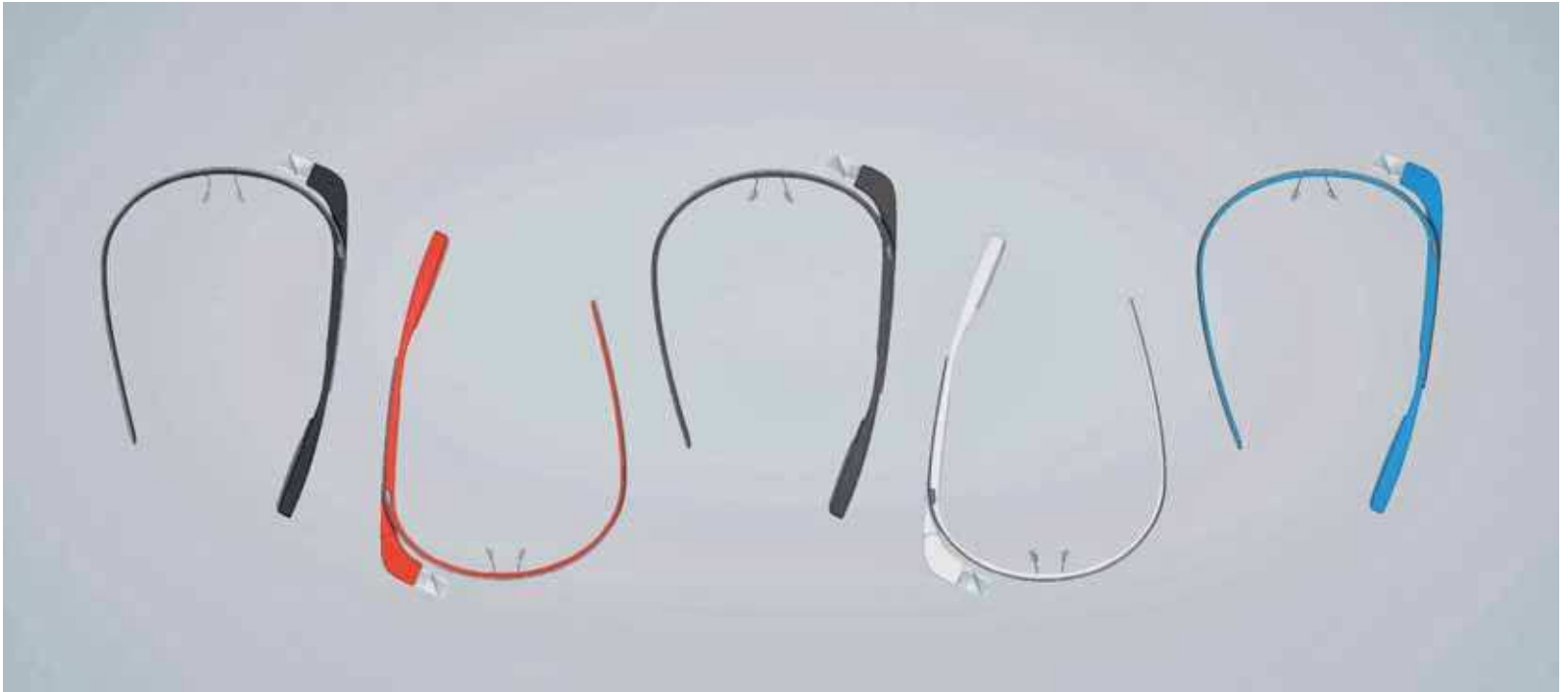
"The basic Android SDK and APIs were used; not the Mirror API," he explains. "There were challenges related to the unusual screen size, density and controls. Also, in order for voice controls to work, we had to make some tweaks, but nothing unorthodox."

A DIFFERENT GLASS

So it might just be that making Google Glass games, from a technical standpoint at least, is something most developers will find relatively easy; if anything is ever simple in the realm of games making.

But AMA has something special up its sleeve that not every studio can boast of, and that is variety of experience.

"AMA's DNA is innovation," asserts Campion. "We always love to try new



platforms and bring our games to the customer whatever device they have in their hand or in front of their eyes. For instance, we have games on Bada, Windows Phone 7 and even on Tizen."

A sister company of Gameloft and Ubisoft, and co-founded in 2004 by a range of individuals including Ubisoft's Guillemot brothers, AMA has also worked on Vita, Kinect, smart TV and numerous other mobile OS projects.

"But coming back to Glass, we are very lucky to have a close relationship with Google," continues Campion. "On Android, we are the top developer since last November. On Google TV, we were in the first batch of developers to deliver games on this new platform. So when, at Google I/O 2012, we were offered the opportunity to enter the Glass Explorer programme. Well, we didn't hesitate too long."

The Glass Explorer early adopter initiative saw both developers and carefully selected consumers given the chance to take part in testing of the hardware, as long as they could commit to a trip to one of three US cities for the device's pre-release launch, and stump up \$1,500. AMA made it through the process.

BUILT TO GLASS

Through making *Escape*, AMA has increased not just its interest, but investment in wearable technology, which has a surprisingly long history.

The history of head-mounted displays that augment reality stretches back well over 30 years. Meanwhile, productised optical head-mounted displays like the Glass, defined by sporting a display that the wearer can see through or view the reflection of projected images in, have been available since the 1990s. And a whole plethora of high-tech adornments and wrist-mounted computers have long existed, starting with ring-abacuses in China's Qing Dynasty in the 1600s. And now AMA is willing to bet that history will continue.

"AMA believes in wearables and, now that it is happening, we are more than excited to be part of this new frontier. Google Glass is a

key element of it, but not the only one. Christian Guillemot our CEO, just decided to build up a fully wearable-dedicated development studio in Rennes, in Brittany," reveals Campion. "So we are heavily investing and welcome any partner or games developer to join us."

As well as looking for partners, AMA is also recruiting individuals across numerous fields from artists to designers. It's a tempting proposal, and one that may have daring developers flocking to AMA's door. What's more, Campion is confident that the opportunity for making games for wearable tech is not the exclusive reserve of a few highly specialised studios.

CHORD LOOPS

Campion admits Google must make Glass a great deal more easy to purchase before it can be guaranteed success, and he is frank in asserting that, initially at least, games developers are best focusing on 'mobile-like' titles as the platform establishes itself.

But, based on the experience AMA have had making *Escape*, Campion has some encouraging advice for developers designing their first Glass game: "Think outside the box. Make it unique for Glass by choosing gameplay you were never able to do before."

It may turn out that Google Glass is the precedent – and not the breakthrough product – for optical head-mounted displays that are embraced by the public. But there is one thing Campion and the AMA team seem sure of.

"I strongly believe in wearables," concludes the head of production. "But I don't know what will be Google's final product, price or content, so there are still many question marks. But again, get ready for wearables."

Will wearables really become a normal destination for the games today's developers

conceive? It's hard to predict. But considering how commonplace wearable technology like the wristwatch is, consumers appear absolutely comfortable with the concept of carrying hardware on their bodies.

And it is those consumers that may one day be playing your games through technology like Glass. So, if AMA is to be believed, you would be wise to consider supporting the platform. ■

www.ama-studios.com

A sense of glass? How stylish Google Glass is (above and below) is a matter of opinion, but the unusual nature of the game design challenge it presents is certainly an appealing one





Games in the frame

Aardman Animation is famous the world over for its films, characters and Plasticine worlds. But as **Will Freeman** discovers, the Bristol studio is also home to a furiously productive and wildly creative games development team

Aardman Digital's Mark Burvill (left) and Jake Manion (right), pose with icon and colleague, Shaun the Sheep.

THINK OF AARDMAN, and it's likely you'll imagine stop-frame animated characters. Be it *Wallace and Gromit*, the *Creature Comforts* commercials or even the influential music video for Peter Gabriel's single 'Sledgehammer', the projects that have made Aardman an icon of the creative industries are wonderlands built in Plasticine.

Or, for the youth of today, Aardman has become a master of computer-generated realms, with its CG films enjoying vast success and many awards.

But Aardman is also a game developer, by way of its Digital team, which today enjoys a generous share of the company's sprawling Bristol facility.

Founded in 2007, Aardman Digital has added a string to the bow of an outfit that today also produces some 75 commercials year. A prolific producer of games for mobile

and web, as well as a creator of numerous websites, Aardman Digital is positioned at the very forefront of what the wider organisation

“Because of our name, we started attracting better and better people quite quickly. We're lucky to be able to do that.”

Jake Manion, Aardman Digital

has now been doing for over forty years; namely entertaining.

The Digital team itself is relatively small, with around 15 internal staff, but they are

supported by an ample quantity of freelance talent. But just who are the people behind Aardman Digital, and what defines the work they do?

FROM CLAY ACORNS

Initially conceived to create websites – and before that newsletters – for Aardman IPs and its legion of fans, the Digital team's early history saw it occupy just a few desks, surrounded by the giant departments working in clay and pixels.

“From that seed of a department, Aardman Digital grew,” explains the team's assistant creative director Jake Manion. “I think, because of our name, we started attracting better and better people quite quickly. We're lucky to be able to do that. We felt that, because we had all these people, we really were punching above our weight as what was



then a relatively small team within the company." As a result, unrelated companies started to catching on to what Digital were doing, and began enquiring about help with IP from outside Aardman's doors.

"So as well as doing our own work, which was going really well, we started to do external work, much like our commercial team does," continues Manion. "It was then that we found ourselves working on quite a large range of different digital projects, but generally with a focus on entertainment."

Since, the staff at Digital have made an array of games for high profile clients including the BBC and Cartoon Network, while producing own IP like the *Home Sheep Home* series, while involving themselves in unusual projects like the Tate's movie, *The Itch of the Golden Nit*, where children used Aardman Digital crafted web-based

development tools to create an entire film, relatively free of adult influence.

It would be easy to assume that those projects have come in on the back Aardman's name alone. After all, with a forty-year heritage defined by huge and well-regarded IPs, it must help with securing client work. Or so you'd think.

A FOOT IN THE DOOR

"We really do have to prove ourselves," insists Aardman Digital technical lead Mark Burvill of the idea that the logo on his business card could secure he and his colleagues work.

"Aardman's reputation can get our foot in the door, for sure, and we probably do find it easy to talk to whoever we want out there, but actually converting that into work is never easy. We still have to prove ourselves in the way everybody else does."

INSIDE AARDMAN



Aardman's reception area, behind which are creative facilities of every kind

THE AARDMAN STUDIO is a remarkable facility. Tucked down a self-effacing Bristol side street, it may not boast the square footage of the sprawling Canadian super-studios, but it contains what developers the world-over would have good reason to envy.

As well as the Aardman Digital team, it contains the beating heart of the company's heritage that is the model workshops, where Wallace, Gromit, Morph, the *Creature Comforts* characters and a wealth of other animation icons have been shaped from clay, fabric and even Girls Aloud brand fake eyelashes. There's also a network of film and stop-frame animation studios, edit suites, grading rooms, audio booths, a sprawling CG team, an advertising department, a merchandising division, set and prop making workspaces and numerous other facilities. There's everything needed to produce games, websites, feature films, adverts, TV shows, music videos and much more besides, and, if needed, it is all at the disposal of the Digital staff.

Elsewhere, in the hallways walls are adorned with the

history of the company, from photos of its earliest days to concept art that set the foundation for some of Aardman's most famous output. Mezzanines play host to elaborate sets from the films, and there's even space for a quaint garden with its own pond; apparently the place to find the company founders when they find time for some respite from their daily workload.

And, as a quantifiable testament to the allure of the creative powerhouse's resonance with consumers across the globe, outside the main entrance a stream of families and aspiring creatives arrive to peek inside or have their photo taken with a Gromit sculpture placed in the main courtyard.

It is a place of near unrivalled character, and is undoubtedly an inspiring place to visit, let alone work inside. Across its many floors and outbuildings, heads are buried deep in work, and there is no doubt that those lucky enough to earn their own Aardman business cards are seriously devoted to what they do. But, unquestionably, the studio is a factory of fun.

"It's not the case that being Aardman means there's no effort to find work," adds Manion. "Like anybody we do loose pitches to other companies. It's not like we're the only team out there doing these kinds of projects."

But the Aardman name does bring something else to the table. In reality, it's a pressure, but a positive one that encourages the team, and helps attract both sparkling talent and some of the industry's sharpest freelancers, which the core team rely on.

"It is pretty powerful to have Aardman's heritage in the back of your mind all of the time," explains Lorna Probert, head of Digital production. "Just walking out the office you see all these icons. From where I'm sat now I can see the top of the Top Bun Windmill and things like that. That is really powerful, to think of the millions of people that have seen that. And in a meeting room here there's



Aardman Digital's head of production, Lorna Probert (above), says creativity is the priority at the studio



A selection of Aardman Digital games, and an iconic piece of the studio's heritage (top left)

some Oscars looking out at us. It's a motivating factor, and helps make everybody here feel like they are part of something special, and that they can contribute to that and have their own part in it."

That heritage is hugely alluring, and several of the Digital staff *Develop* spent time with pointed to how working in a stones throw of the desks where Wallace, Gromit and Shaun's adventures are concocted does much to push the team.

"We have a name to maintain, and we can't let that crack," explains Manion. "Aardman has a very good reputation, so we can't do anything below standard, or we will get pointed out."

"And that also helps with what our freelancers give us, because in working for Aardman they are getting to deliver something that is above and beyond what they normally get to do," interjects Burvill. "So whether it's us or our freelancers, we all give a lot of love to what we do. The product that comes out the end always has to have that Aardman quality and humour, and that feel that has made the company what it is."

FUNNY BUSINESS

That Aardman quality is famously evident throughout the company's output, but the

humour Burvill highlights is a more abstract concept. Nonetheless it is a vital ingredient in what defines the Digital department, and key to attracting the right kind of client work.

"I'm sure if you ask any digital studio they'd like to make lots more of their own stuff, and we're no different really."

Lorna Probert, Aardman Digital

"There is a real character to this place, and it's quite hard to put a finger on it," suggests Probert, before a long pause.

"In fact, it's really hard to put a finger on it. Perhaps it's to do with our priorities. More than anywhere I've ever worked, creativity is the priority here. Obviously we need to make money, but that seems to come further down the priority list. Everybody is focused on making the very best, really beautiful, funny thing that they can."

The result is that the team have produced an abundance of projects that, be they own

IP or not, have character in ample supply, and as such, a fortuitous circle has formed, where potential clients looking for that Aardman touch come to Digital with, often, just the kind of work the team love to tackle.

"I'm sure if you ask any digital studio they'd like to make lots more of their own stuff, and we're no different really," admits Probert. "We would love to do more, but it's about finding a balance between that stuff and the bread and butter client work."

The team does have sizeable internal projects that they describe as 'bubbling away in various stages', but the fact remains that client work for broadcasters, galleries, museums and more pays the bills while the developers concoct their dream projects.

"Fortunately it's really interesting stuff we get to do for clients, perhaps because of our heritage, and we learn so much from it and have gained so many skills that we'd love to apply to our own brands and to developing new brands," continues Probert.

"That's something that we'd love to do more off, but that's not to say we'd want to move on from the other stuff we do; it's just about getting the balance right."

The client work Aardman undertakes may be a necessity for the studio, but as bread and butter goes, it makes for a fairly tasty dish.



CLOSE TO HOME

And the Aardman Digital staff's luck doesn't end with the fact that their reputation for characterful work attracts rewarding client work, for they also have an enviable resource so close to home they barely need to leave their desks (see panel 'Inside Aardman').

"I feel very lucky that we have all that stuff on our doorstep, because we do use it," says Burvill of the huge resource provided by other Aardman departments.

"And sometimes we use it a lot," he adds. "For example, we use the sound guys here to do the sound of our games, and we're increasingly doing more with the CG teams because the technology available for the games we're making means we can."

"We're reaching the point with stuff like Unity where we can actually use the models those guys are creating in our web games, so we're starting to see that quite a bit now. It's a really blessed position to be in, because we are up against small studios about the size of Aardman Digital, but they don't have what we do in the same building."

Getting to that point, however, has taken several years. When Aardman Digital was founded it was the wider company's young upstart, competing for the attention of the vast, established teams toiling on films and adverts.

"We've spent a lot of time educating and exciting people internally about the potential of Digital, and I think we really are now entrenched in everybody's thinking, and are part of what Aardman is as one company," confirms Probert.

“More than anywhere I've ever worked, creativity is the priority here. Obviously we need to make money, but that seems to come further down the priority list.”

Lorna Probert, Aardman Digital

"We do work with lots of the other Aardman departments and today we don't feel in anyway like an isolated team."

But at the same time, insist the Digital staff, they remain autonomous if they feel so inclined, and can operate as a free agent, making the games they do in the way they want. It just so happens that, for example, if

HISTORY IN THE MAKING



Aardman creation Morph, getting ready for an episode of TV show Take Hart

AARDMAN CO-FOUNDERS
Peter Lord and David Sproxton discovered their shared love for animation at school, and went on to establish the company name way back in 1972, when video games were a distant and fledgling industry.

Four years later they set up shop in the UK's West-country city Bristol, which to this day is a hub for music, film, games, graffiti and much else besides. It was there that they first created Morph, a beloved character for children's TV art show *Take Hart*. By 1982, terrestrial broadcaster Channel 4 commissioned Aardman to create *Conversation Pieces* for an adult audience, which would see the team find their knack for animating puppets to real life conversations. By 1985, *Wallace and Gromit* creator Nick Park had joined the team, and they would go

on to make feature films, music videos and adverts that to this day strike a chord with a global audience. Over Aardman's long history the awards have come rolling in, and the client base has spread across the world.

By 2006, Aardman's animation included not just stop-frame animation, but CG, and a year later Aardman Digital was founded, adding games and web development to the company's rostrum of success stories.

From the founders to the first cleaners hired at the company, many of Aardman's earliest staff can still be found walking the halls of the studio's captivating facility (see panel 'Inside Aardman'), joined by an army of employees and talents that have earned their place at a creative center 40 years in the making.

they are working on a game for one of Aardman's own brands, or handling the digital element of an IP that the commercial team is also supporting, they have unrivalled access to assets, talent and specialist staff involved in said project. Quite simply, they've balanced integration and autonomy with grace, and look set to reap the benefits for years to come.

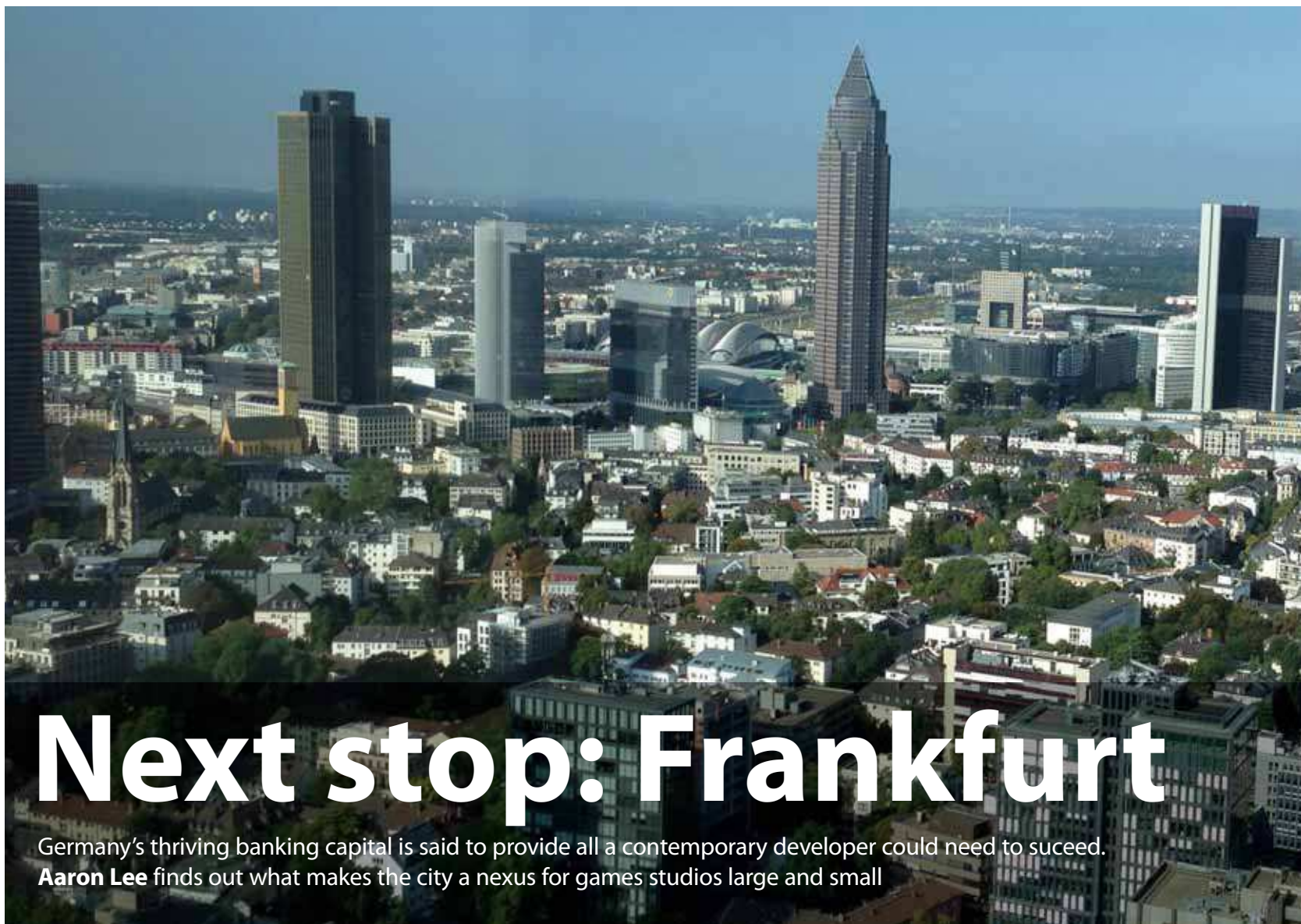
"We can be very independent if we want," concludes Burvill. "If we're working for an external client, we can do that completely autonomously. But equally we can be as integrated as we need to be."

It's a situation that all of Aardman Digital's staff say they feel lucky to be in, and it's a hugely attractive idea to developers looking for work. Fortunately, as the team continues to grow, it appears opportunities to work with the cultural giant that is Aardman will increasingly be available to games talent, both freelance and permanent.

For now, the Digital staff must return to their desks, to create more of the games that have made them one of the UK's most distinct developers, and so it is that they leave *Develop*, walk past those towering set-pieces from Aardman's past, and return to the daily grind of building fun. ■

www.aardman.com/digital

Some of Aardman's earliest staff (above left), including founders Peter Lord and David Sproxton, gather during a break from founding their creative powerhouse



Next stop: Frankfurt

Germany's thriving banking capital is said to provide all a contemporary developer could need to succeed. **Aaron Lee** finds out what makes the city a nexus for games studios large and small



Top-to-bottom: Crytek's Faruk Yerli and Keen Games' Jan Jöckel. Main image: Frankfurt's skyline

RELIABLE AND ABUNDANT transport connections probably aren't the first thing that comes to mind when you think of Frankfurt. But speak to those that have spent time in this curious metropolis and you find that getting around is one of its greatest strengths, and part of the reason why it has become a bastion for games development.

Frankfurt Airport was the third busiest in Europe in 2012, and the eleventh in the world. The city's main railway station, Frankfurt Central Station, sees about 350,000 using it. Its two underground railway systems connect the relatively small city centre, and population, which just clears 687,000, with its densely populated suburban surroundings. All of this, and the fact that it is Germany's banking capital is why games developers have chosen to settle here.

But while Frankfurt may have all the right connections, does it still have the capacity to support the changing games development scene that managed to grow there?

GET YOURSELF CONNECTED

To answer that question, a look to the studios and what brought them to Frankfurt in the first place is needed.

"When we decided to move from the small Bavarian town of Coburg back in 2006, we asked the 110 employees we had then what city they'd like to relocate to. Frankfurt was

the winner because of the international flair it has to offer," says Crytek managing director Faruk Yerli.

You can't discuss games development in this city out without talking about the studio

“Frankfurt truly is a great place to live and meet people, and is definitely allowed to call itself ‘the world’s smallest metropolis’.”

Jan Klose, Deck 13

behind *Crysis*. Crytek is the sector's biggest employer in the region, making console titles as well as licensing out its own CryEngine, which has helped to ensure that competition in the third-party engine market isn't a two horse race between Unreal and Unity.

"It is a rather small, with a population of less than one million, but it feels like a real metropolis – not only because of its skyscrapers and its many high-rise buildings," Yerli continues. "Frankfurt airport is another key strength. As one of the main European hubs, it is easy to get direct flights to all major destinations around the world. Its central

location within Europe and Germany also make it a major rail and highway transport hub. Frankfurt is home to many game development studios and internationally operating publishers. All of that makes for a strong and connected game cluster."

Jan Klose, creative director of Deck 13, a long-running Frankfurt studio best known for its comedy adventure brands and RPGs, also has much praise of the city's infrastructure.

"Frankfurt's city life has experienced an enormous overhaul during the last decade, being topped with the reconstruction of a whole quarter of the old city centre. Shopping, partying or just hanging out at the riverbank is much more attractive now than it used to be," he tells *Develop*. "Nowadays, Frankfurt truly is a great place to live and meet people, and is definitely allowed to call itself 'the world's smallest metropolis'."

In fact, the city is so well connected that some studios don't even need to have all their departments in one place to benefit.

Cliffhanger, founded by Jan Wagner in 2006, is an independent studio with 35 staff producing core-focused games for mobile and desktops platforms.

"Frankfurt is international enough to get people interested in moving here and connected enough to get to anywhere in the world quickly. It is also a great connection spot to advertising and film, sound and



technology suppliers – while most of our development happens in Vienna, most of our business is made in Frankfurt,” says Wagner.

SMALL, BUT MIGHTY

There is broad agreement from the developers that we spoke to about the city's excellence as a hub for business. A topic that sparked more varied opinions, however, was what exactly Frankfurt's core development strength is.

Asked whether the urban centre has a particular studio model that defines the city, Crytek's Yerli says: “Not really. I think Frankfurt is pretty versatile in that regard. From triple-A to social and mobile games studios, to Nintendo's European headquarters, to Sony Computer Entertainment – there is nothing Frankfurt and the surrounding region is really lacking in industry terms.”

It's fair assessment. Frankfurt is home to the likes of Keen Games, which makes titles for console and PC, free-to-play outfits, such as Playzo, and service companies, such as Dynamedion. And as Yerli points out, major publishers including Sony, Nintendo, Namco Bandai and Bethesda – and tech firms including Samsung and HTC – have offices in Frankfurt. While they do not necessarily develop their products in the city, the presence of these names indicates that it is frequently where meetings and deals are struck.

On the other hand, Cliffhanger's Wagner says: “I think it is actually the small to mid-size model. With the exception of Crytek, most of the devs have between fluctuating between 20 and below 100 employees. We have seen

“I think Frankfurt is pretty versatile. There is nothing Frankfurt and the surrounding region is really lacking in industry terms.”

Faruk Yerli, Crytek

the rise and fall of consoles, PCs, browser, mobile and we managed to survive. There is also a special bond of respect between studios here, I think.”

Furthermore, the bond the Wagner speaks of has been manifested tangibly in the form of trade body Gamearea.

“Our purpose is to promote the economic, political and public position of games companies in Frankfurt and the Rhein-Main area,” says Gamearea board member Max Bimboese. “The games industry is recognised to be one of the most technologically

CASE STUDY: CRYTEK



Crysis 3 in action (main), and Crytek's Nick Button-Brown (inset)

A STEADFAST DESIRE to make the impossible a reality characterises Frankfurt's largest independent developer.

Founded in 1999 by Cevat, Avni and Faruk Yerli, Crytek has steadily established itself as one of the world's most progressive studios, producing the very first *Far Cry* game, as well as the award-winning *Crysis* series.

Along the way, it has diversified to become an engine supplier and expanded its development studios.

Crytek general manager of games Nick Button-Brown (inset) explains how the studio is evolving to face the new gaming landscape: “We are making some great progress at the moment. The team is working really hard to finish *Ryse: Son of Rome* as a launch title on Xbox One, and I'm very excited about their progress. *Warface* has got major updates around the world; not least of which is its upcoming release in the Western territories on our social gaming platform Gface, complete with an Xbox 360 version coming in 2014.

“The team in Nottingham – Crytek UK – is making great progress on our reinvention of *Homefront*, and we have a number of projects we haven't talked about yet. So basically our focus is on making these games the best and most immersive experiences possible.”

Button-Brown adds that it recently rebranded its fourth

generation CryEngine, so as to be ready for the next wave of console hardware.

“We have a lot of effort going into research at the moment, both centrally and through the games teams, and all of that work is really driving our engine forward. I think *Ryse* is going to set a benchmark for visuals for this next hardware generation, but we are also focusing on our tools and pipelines as this is the best way to help deal with the increased fidelity required by and for the next generation of games,” he says.

Looking further ahead still, Crytek is moving into the arena of self-publishing.

“This is a really interesting step for us, where we can connect with our players more directly and focus on the games as a service,” says Button-Brown.

All this growth means the studio is on the lookout for talented individuals who can come up with new ways of doing things as well as help it to deliver the impossible.

“In terms of our games, in the end it all comes down to the people,” concludes Button-Brown. “We have really talented teams and individuals, and these are the people that keep pushing us forward and help us get even better. We certainly are ambitious for our games and are planning for each one on a long-term basis.”

www.crytek.com



Frankfurt may be cosmopolitan and chic, but observers insist it is free from the 'short-termism' of Germany's famed hipster hotspots



Top-to-bottom: Deck 13's Jan Klose, Uniworlds Manuel Scherer, and Frankfurt Centre of Creative Industries' Manuela Schiffner

advanced and dynamic industries, both by the local government of Frankfurt, as well as by the regional government of Hessen."

Boasting a list of over 30 members, Gamearea's primary achievement to date is helping to establish programmes to promote the industry with public funding.

"These programmes are one achievement of Gamearea's close work with the governmental institutions. As always, funding could be more and we are working on it," adds Bimboese, whose work we'll hear more about later.

WORKING ON IT

This year, *Develop* has previously investigated Hamburg and Berlin. How Frankfurt stacks up when compared to its cousins tells us more about the region's prospects on the world stage.

While the city's success stories have led some to proclaim Frankfurt as the next "triple-A Mecca", Cliffhanger's Wagner is more measured about this would-be dev 'hotspot'.

"Well, in the first place it isn't a hotspot – there have not been massive amounts of money pumped into the industry here, as in Berlin. We haven't seen the quick rise and fall of a certain business model, as with Hamburg's many browser companies, and we certainly don't see the tax-exemption based industry growth as in Canada," says Wagner. "At the same time, while we may be less hip,

we are also less driven by the short-termism that goes with it."

From the slow down of some of Hamburg's biggest browser companies, such as Bigpoint, perhaps it's healthy to exercise pragmatism at

The city and region is aware of the importance of the games industry, and they support us wherever possible.

Pete Walentin, Keen Flare

this point. Survival and adaptation is what it's about, says Wagner, and many of his peers tend to agree.

"The biggest challenge nowadays is to find employees," says Jan Jöckel, MD of Keen Games. "We have so much to do and the business is growing here. We have built a very strong base and now we need developers who would love to join us."

In addition to sourcing talent and the cost of labour, Michael Liebe of Deutsche Gamestage also feels that the city's primary draw, its transport network, is presently under threat.

"From outside, what I can observe is that Frankfurt, as a city, is getting more and more competition in Europe," he says. "For a long time it was the central communication hub thanks to its massive airport. Air transfer is turning less centralised, so that has an effect on the city."

Does that mean Frankfurt needs more support from its local government and trade bodies in order to meet these shifts?

"Frankfurt studios do not need the support," Keen Flare CEO Pete Walentin argues. "We are strong and stable. We take care of ourselves. The city and region is aware of the importance of the games industry, and they support us wherever possible."

However, Wagner feels Frankfurt does need more support, especially when it comes to getting games recognised on a even keel with the rest of the arts.

"We have been struggling for proper support for a long time – while the city of Frankfurt has always been very supportive, on a regional and national level games still are way behind the films as a creative industry," he states.

"To me, this damages the potential for creating games outside the immediate market value – elevating the art of games to something more relevant for society at large beyond being a favourite pastime. I think if politicians did not see it as a kind of



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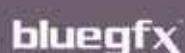
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Frankfurt's Deck 13 team, who, when not synchronising bouncing, created *Lords of the Fallen*



glorified IT industry with an added 'bad for my kids' effect, we could be much further along as an industry."

Manuel Scherer, general manager of Rhein-Main-based Uniworlds Game Studios, adds: "I think this is something we have to work on. The trade bodies know about the games industries, but there's much to be done. This doesn't necessarily mean tax breaks. I think public acknowledgement is one of the most important steps that have to be pushed forward more."

Frankfurt is by no means unsupported, though. The aforementioned Gamearea association has been working with the Frankfurt Centre of Creative Industries to kick-start funding programmes for developers of all sizes in the region.

Manuela Schiffner, director of the Centre of Creative Industries, says: "We assist companies in many ways – no matter whether it's a one-person business or a group; no matter if the goal is on a local scale or international level. Thanks to our excellent network with municipal authorities and the local business scene, as well as to our extensive knowledge about various industries, we can provide valuable support starting and running a business in Frankfurt."

"The industry association Gamearea is a strong partner of Frankfurt Economic Development. Together we offer the

networking and knowledge transfer platform Gameplaces, which is an integral part of the Frankfurt, Hessen and German video and computer gaming industry."

We had great boom years with browser gaming in recent years, while now everything seems to shift to mobile and new consoles.

Pierre Langer, Dynamedion

Moreover, Frankfurt Economic Development wants to encourage the development of innovative games and is urging developers to submit titles for its European Innovative Games Award.

Schiffner adds: "The importance of video games as an economic factor cannot be stressed enough. The Frankfurt Economic Development and the City of Frankfurt are proud of this dynamic industry and offer long-term and individual support for the games industry's needs."

"Video games drive the creative and technological industries to ever-new heights. They are a promoter of innovation, and in

this they are perfectly at home in the city of Frankfurt."

ALL THAT WE NEED

The struggle for new talent and a rising cost of living is a concern, but neither are uncommon issues for a city of its stature.

"We have the same troubles everywhere," says Dynamedion managing director Pierre Langer. "Times are always changing and so are requirements by the market and audience. We had some great boom years with online browser gaming recently, while now everything seems to shift to mobile and new consoles. So this transition phase is exciting, but not different to any other game dev in Germany."

But perhaps such things are a stumbling block to Frankfurt's ongoing regeneration.

"Frankfurt is an ever-evolving city that is positively affected by being a melting pot for lots of different nationalities," says Crytek's Yerli, whose studio is soon to release *Ryse: Son of Rome* for Microsoft's Xbox One. "That makes it a vibrant place to live and work."

Crytek, Deck 13 and others are making great strides to ride the changes. Meanwhile, the region's developer association Gamearea is helping to drive discussion and bring the issues that matter to the corridors of power. With the right actions, Frankfurt's developers seem assured to have a thriving future ahead of them. ■



Top-to-bottom: Keen Flare's Pete Walentin, Jan Wagner from Cliffhanger, and Pierre Langer of Dynamedion

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2

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Why
Lionhead
picked UE4
p46



The mobile technology landscape

Middleware of every kind is turning its attention to mobile. Over the next six pages, Develop guides you through all the essential tools, from engines and pipelines to lighting and retention tech, p36

Autodesk
on
Maya LT
p42



Geomerics
shines a light
on Mali
p50



Mobile essentials

You've got to be in it to win it. And to win it in today's market, you've got to be on mobile. Global successes such as Candy Crush Saga and Puzzle & Dragons have helped push gaming even further into the mainstream. To help you reaching these lofty heights, **Aaron Lee** has assembled Develop's first guide to app and mobile games development tools



Note: All of the prices listed in this article refer to the cost of a single licence per seat/developer, annually, unless stated otherwise. Where we were unable to find UK licence prices, we have estimated conversion prices



ENGINES AND MOBILE DEV PACKAGES

MARMALADE | USED IN: Draw Something, Plants vs Zombies, Signal to the Stars, Talisman Prologue, Vector

MARMALADE SDK IS billed as the fastest way to build cross-platform C++ games. It enables you to open Xcode or Visual Studio projects and compile them for iOS, Android, Windows Phone, BlackBerry 10, Tizen, Mac and Windows desktops from a single Marmalade project file.

In 2013, the firm launched two significant supplements to its flagship SDK, which it feels has helped to serve the needs of Marmalade users better. With **Marmalade Juice**, a cross-platform SDK for Objective-C, you can open your Objective-C code inside Marmalade, fine tune platform-specific features and then compile it for Android and beyond from a single Marmalade project file. And a little code goes a long way with **Marmalade Quick**, an acceleration tool with a fast, flexible and open environment. Quick is a Lua-based 2D RAD tool for cross-platform development,

and was used to launch Marmalade's first in-house game, *Signal to the Stars*, to four app stores at once. HTML5 is also catered for with **Web Marmalade** for speeding up web development with native performance.

Marmalade CEO Harvey Elliott says: "By bundling premium partner plug-ins into Marmalade 7 for in-app purchasing, advertising, analytics, monetisation, and other services, we're providing a package of tools designed to get smaller and indie Marmalade game developers up and running quicker, as well as helping them to generate revenues from their apps by providing the best tools available."

Marmalade SDK is priced from £379 (\$500) per year (Indie licence), and comes with Marmalade C++, Marmalade Quick and Web Marmalade included for free. Marmalade Juice is available upon application.
www.madewithmarmalade.com



EPIC GAMES | USED IN: Infinity Blade series, Batman: Arkham City Lockdown, Borderlands Legends, Injustice

THE POWERHOUSE BEHIND the ambitious *Infinity Blade* series offers two solutions for mobile games developers. Firstly, its full source **Unreal Engine 3**, which includes complete access to the integrated Unreal Editor suite, C++ source code and direct support from its engineering team. In addition, it provides the free edition of Unreal Engine 3, the **Unreal Development Kit**, which has had more than 2.25 million unique installs to date.

Both products come with a set of industry-leading middleware packages and integrations at no additional cost. The elegant upgrade path from UDK to the full source UE3 is a particularly strength, allowing you room to grow and stretch your wings without having to learn new technologies. The vibrant Unreal Engine dev community also means that there are plenty of resources available, whether you're

looking to have a question answered or seeking members for a virtual team.

Epic provides additional information on its developer network and also produces video tutorials to teach you more about making mobile games with UDK on its Twitch TV (www.twitch.tv/unrealengine) and YouTube (www.youtube.com/unrealengine) channels online.

Epic Games European territory manager Mike Gamble says: "Unreal Engine technology provides a tried and tested high-quality development environment for mobile development. Teams using Unreal are equipped with tools that help them produce the quality necessary for standout titles to compete in the crowded mobile app space."

Unreal Engine 3 is available and priced upon application. UDK is free.
www.unrealengine.com



AUTODESK | USED IN: (Product just launched)



LAUNCHED IN AUGUST this year, **Maya LT** is Autodesk's bid at opening its floodgates to mobile developers. Maya LT has been designed from the beginning specifically for the needs of start-up and mobile developers. Autodesk tell us that the product went through extensive testing and everything from its feature set down to its UI has been optimised to meet the unique needs of the mobile community.

With Maya LT on Mac or PC, artists can use the Nex toolset, alongside essential animation features, such as keyframing and rigging tools via Autodesk HumanIK rig and skeleton generation. The product also has advanced material creation and the Turtle tool for texture baking and simulating realistic lighting as well as ShaderFX, a node-based shader editor. Furthermore, Maya LT supports Unity, Unreal Engine and CryEngine. An SDK for Autodesk's FBX file

format is available to let devs adapt environments to the FBX format.

Before the launch of this new package, Autodesk released its **Scaleform Mobile SDK** and **Unity plug-in** for iOS, Android and Windows Phone last year. The former enables developers to use the SDK as a standalone Flash runtime to port games to mobile platforms, while the plug-in brings Autodesk's popular UI tools to Unity developers.

Autodesk director of game solutions Frank Delise says: "We really believe Maya LT combines the best tools for game asset creation at a price that can be as flexible as the developer needs. Budget doesn't have to cripple the development cycle and with Maya LT, artists can easily create better art using industry standard tools."

Autodesk Maya LT £700, Autodesk Scaleform Mobile SDK/Unity (plug-in) £195.
www.autodesk.com

UNITY | USED IN: Bad Piggies, Deus Ex: The Fall, Leviathan Warships, Temple Run 2, The Room

FROM 2D PUZZLE games to complex 3D action titles, **Unity** continues to be a favourite among developers for its accessibility, dependability and cross-platform capabilities. For mobile, Unity's integrated development environment allows developers to port between all major mobile platforms, and soon Tizen and PlayStation Mobile. Games can also be ported to the web (via Unity Web Player), PC, Mac, Linux and all major consoles, including PS Vita with relative ease, giving you greater potential to reach the widest audience possible.

The fundamental Unity tools are available for free and you can currently use those free tools to publishing games to iOS, Android, BlackBerry 10 and Windows Store for no cost, collection fee or royalties. However, once you or your company starts to bring in revenues over \$100k a year, Unity asks that

you upgrade your licences to **Unity Pro**. The professional version includes extra features designed to add extra value for high-end production, including more advanced lighting, code and editing options. And Unity's own asset store also means further time and cost-savings can be made.

Unity Technologies CEO David Helgason says: "Unity's power, efficiency, elegance of design and massive cross-platform capabilities make it the best option for developers looking to create games for any range of mobile devices. With ancillary bonuses such as the Asset Store and recently announce Unity Cloud and sharing services, Unity is by far the most complete package in the market."

Unity 4 is free, Unity Pro (plus optional iOS, Android, BlackBerry add-ons) priced from £470 (\$750).

www.unity3d.com



HAVOK | **USED IN:** Gangstar Vegas, Halo: Spartan Assault, Modern Combat 4

THE OUTFIT BEST known for its physics tool made a splash back in March with the announcement of **Project Anarchy**, its first specially made package for mobile games developers. This end-to-end mobile games engine allows you to ship games for free on iOS, Android and Tizen. Incorporating Havok's Vision Engine, Physics, Animation Studio and AI products, Project Anarchy is packed with features such as an efficient asset management system, LUA scripting and debugging and a full library of sample materials, tutorials and videos to help make development faster and more efficient.

The mature feature set should give those familiar with the software much comfort.

Havok head of developer relations Ross O'Dwyer says: "Project Anarchy is really about offering power and versatility to mobile developers. In addition to powerful triple-A game tech that ships with the engine, it provides devs with direct C++ access so they can customise the engine as much as they need. And best of all, this all comes with absolutely no revenue restrictions."

Project Anarchy is free, Project Anarchy Pro pricing is available upon contact.
www.projectanarchy.com

**THE GAME CREATORS** | **USED IN:** Driving Test Success series, Sky Without Sun: Target, Space Connection: Atlas

THE BIG BOYS aren't all that's available for mobile devs these days. For those in search of formable development alternatives, **App Game Kit** is a worthy solution. Games and apps can be built in BASIC or C++, making the tool ideal for beginners or professional developers. And there's no need to worry about the complexities of bringing your game to the different mobile platforms it supports, as its creators have built the engine to take care of such tasks. AGK also aims to make testing on mobile devices easier. With its compile and broadcast feature in the BASIC environment you can

transmit your games to any of your devices. Version one is available now and supports iOS, Android, and BlackBerry. Meanwhile, version two is well underway, following a successful crowdfunding round.

The Game Creators development director Rick Vanner says: "App Game Kit is easy to learn and start coding with. It's a tool we have used to great success recently when we developed the UK educational number one driving test app on both iOS and Android for Focus Multimedia."

App Game Kit priced from £40 (\$60).
www.appgamekit.com

CORONA LABS | **USED IN:** Blast Monkey, Bubble Ball, Fun Run, Major Magnet, Streetfood Tycoon

DEVELOPING MOBILE APPS that run on all key devices is getting harder, and there is an increasing need to diversify and publish cross-platform content. **Corona SDK** aims to offer the ability to seamlessly publish apps across multiple platforms with a single code base, giving developers room to focus on creating engaging, high quality games. Supporting iOS, Android, Kindle and Nook, Corona SDK uses a Lua development environment, which should be familiar to Flash and JavaScript developers.

Currently used by more than 250,000 indies and studios worldwide, including EA

and Namco Bandai, Corona's toolkit is an exciting alternative for those that are looking for speed and audience retention above all.

Corona Labs COO David Rangel says: "While some developers are looking for quick and nimble solutions to create hits and generate revenue, others are looking for a solution to build apps based on their customers' specs. Corona SDK is a multifaceted tool that's ideal for a variety of developers, from indie devs, to game studios building out their own IP."

Corona SDK is free, Corona SDK Pro £368 (\$588), Corona Enterprise from £594 (\$948).
www.coronalabs.com

**LUDEI** | **USED IN:** Dominion, Heroes of Honor, iBasket, Mortar Melon, Scribble Mix

THE BEAUTY OF the HTML5 world we're entering is the range of platforms that can now be served by this new universal standard. **Ludei** provides you with a customised JavaScript virtual machine for accelerated HTML5 canvas and WebGL app and games deployment on mobile. Its makers claim Ludei offers the fastest HTML5 gaming experience around, while its CocoonJS Launcher App and Cloud compiler is said to simplify the process of testing and building the final applications to upload to the markets. Along with this, Ludei also gives you access to important

native features, such as native ad networks, in-app payments and push notifications, through a single API.

Ludei VP of engineering Iker Jamardo says: "HTML5 has many advantages: from cross-platform to all the features of the web, like online update, ease of integration and fast prototyping. Ludei's technology is the easiest and most effective way to develop, deploy and monetise HTML5-based games and apps. You can finally focus on product and let Ludei take care of the platform details."

Ludei is free.
www.ludei.com



Infinity Blade III, from Chair Entertainment, exhibits the latest advancements in UE3 mobile development on Apple's newest crop of smartphones



ENGAGEMENT AND MONETISATION

NEXTPeer

LAUNCHED IN AUGUST 2013, **Nextpeer** is a multiplayer social SDK for mobile games that aims to enable you to easily create multiplayer games, as well as increase retention and engagement for your games.

It is said to take less than 15 minutes to integrate with the SDK, and some 2,800 games are already integrated with the Nextpeer SDK on iOS.

Nextpeer founder and CEO Shai Magzimof says: "With Nextpeer, you can increase player engagement, retention and boost discovery. Developers can build a bigger games portfolio in the App Store or Google Play using our product and generate more revenue easily."

Nextpeer SDK is free.

www.nextpeer.com



The Nextpeer team

PLAYHAVEN



PLAYHAVEN OFFERS A selection of tools targeted at helping you manage player acquisition, engagement, and monetisation, on iOS and Android, plus Unity, Adobe AIR, Marmalade and Corona via plug-ins.

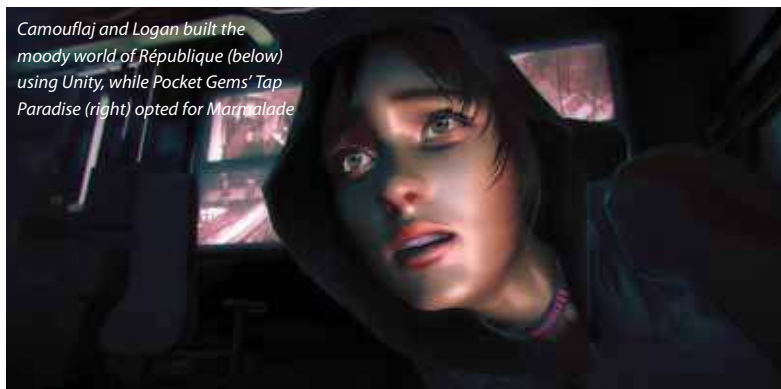
Flagship tool, **Acquire** is intended to help you pick up new users through PlayHaven's ad network. **Engage** helps you learn more about your users, build loyalty, improve communication and re-engage after they've left the app. Finally, **Monetize** is intended to help grow revenue by creating and deploying in-app purchases and relevant ads to targeted users. Recently, the firm

announced a partnership with Corona Labs, integrating its services with the mobile SDK.

PlayHaven VP of publisher development Zach Phillips says: "PlayHaven offers a single solution to help developers address their business needs, so creative developers can do what they do best: create. Our goal is to provide developers with the best, most comprehensive business solution, so they can focus on creating amazing games."

PlayHaven Acquire, PlayHaven Engage and PlayHaven Monetize are free, but additional costs exist for advertising and other services.

www.playhaven.com



Camouflaj and Logan built the moody world of *République* (below) using Unity, while Pocket Gems' *Tap Paradise* (right) opted for Marmalade



GRAPHICS, LIGHTING AND PERFORMANCE

IMAGINATION TECHNOLOGIES



PLAYERS EXPECT TO be able to fire up their mobile games, and pick up right where they left off without a moments pause.

Imagination's **PowerVR Graphics SDK** aims to help you achieve the lightning-fast performance that today's players demand. A cross-platform toolkit for iOS, Android and BlackBerry designed to support all aspects of 3D graphics development, the tech is used in over a billion devices today.

Imagination Technologies senior manager of ecosystems Bryce Johnstone says: "At Imagination, we are focusing our efforts on providing the best cross-platform

profiling and debugging utilities for developers looking to create applications targeting our PowerVR GPUs. The functionality, examples and documentation in our PowerVR Graphics SDK provide unique, valuable resources that make our graphics development environment the leading solution for graphics development in mobile. Importantly, using our SDK and support resources can save developers countless hours of precious time, and enable them to develop better, faster apps."

PowerVR Graphics SDK is free.
www.powervrinsider.com

ARM

THE FIRM BEHIND several microprocessors that power today's pocket-sized computers, also offers a selection of software development tools to ensure that you are able to extract every ounce of performance from the ARM Mali platform, understand graphical issues and play around with its leading-edge technologies early.

ARM offers its **OpenGL ES Emulator** that supports new APIs (OpenGL ES 3.0) and tech (ASTC texture compression) to ensure you can begin working on these technologies and reduce time-to-market for your gaming content. Furthermore, its Mali GPUs are found

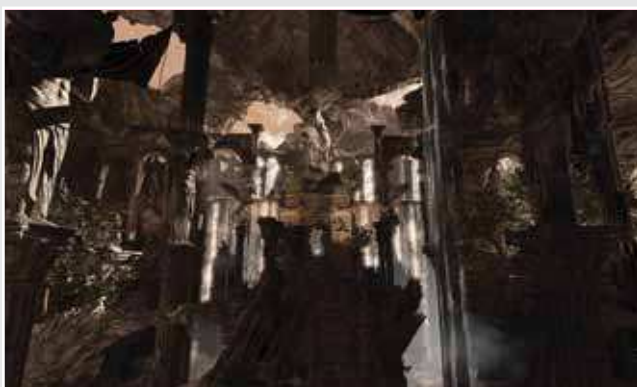
in 20 per cent of Android smartphones and 50 per cent of Android tablets.

ARM's product manager of Mali development tools Anand Patel says: "Developers should use our tools to ensure their games run well on mobile and consumer devices. And to take the guesswork out of performance analysis and debug, allowing the them to reach the market quicker. Our tools offer leading edge features and visibility not found in other dev tools."

ARM Mali GPU Software Development Tools are free.
malideveloper.arm.com



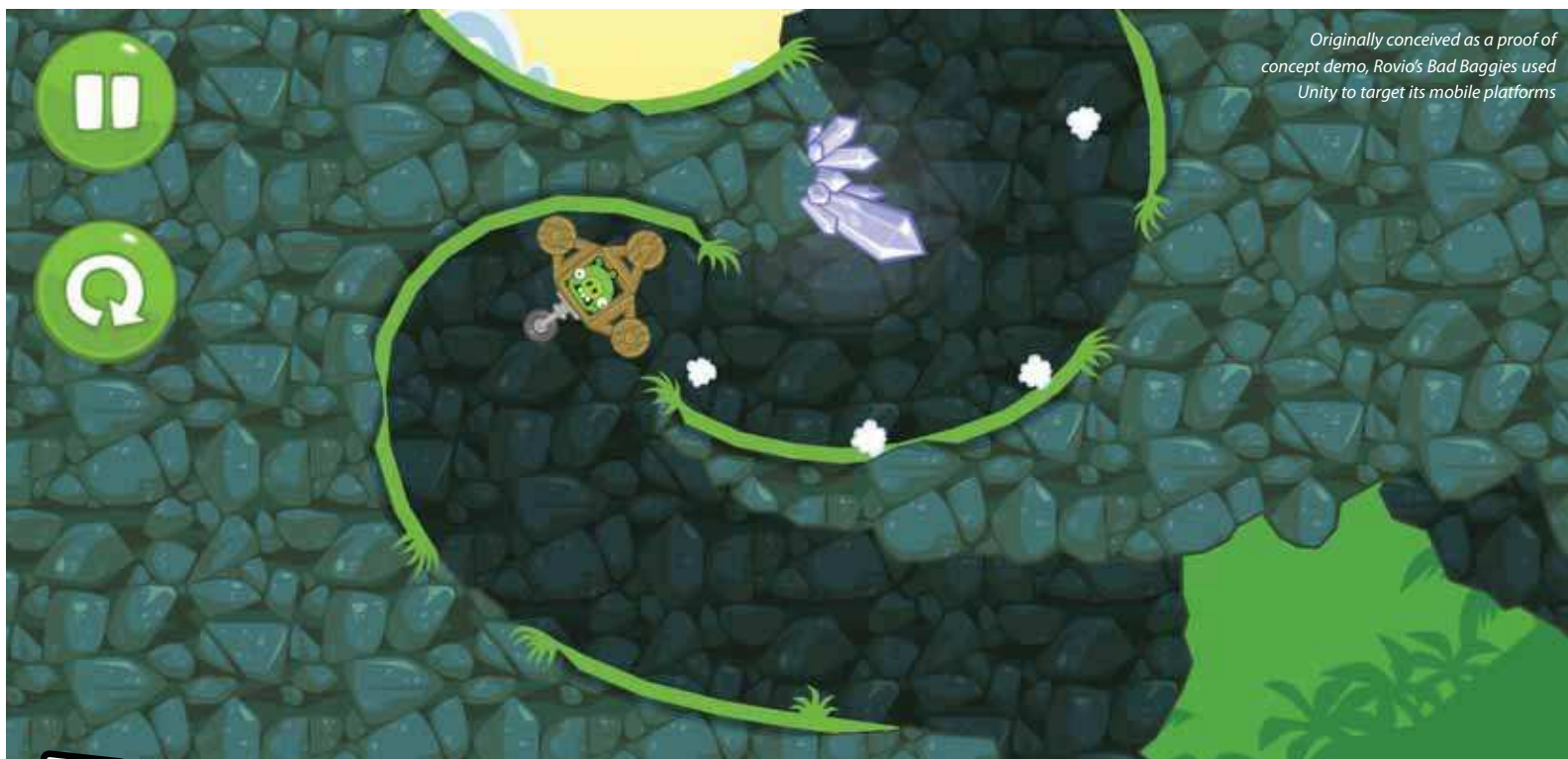
GEOMERICS



A **HEAVY LIFTER** when it comes to lighting, Geomerics' chief tool has been ported to mobile in the last two years. The rapid improvements of mobile devices have brought console-quality techniques to mobile and **Enlighten** is a particularly compelling offering, with its ability to scale naturally to a platform's capabilities, be it iOS, Android or PS Vita. The tool supports all lighting styles, from fully dynamic to totally baked, and can mix and match these throughout the game. Its workflow has also been designed with time-saving in mind, making it easier to build for mobile.

Geomerics founder Chris Doran says: "Players expectations for mobile games are increasing rapidly, particularly for games that offer a 3D experience. Developers are looking to offer an experience that is much closer to console quality to make their title stand out or, in some cases, to offer a companion experience to a console title. Technologies like Enlighten, which scales from mobile to next-gen consoles, are crucial to developing these experiences."

Enlighten prices are available upon contact or request.
www.geomerics.com



Originally conceived as a proof of concept demo, Rovio's Bad Baggies used Unity to target its mobile platforms



SOUND

AUDIOKINETIC

WWISE IS ONE of the leading audio tools for console development. Audiokinetic believes that mobile developers require the same productivity and quality as the big dev houses, which is why it grants them access to the full package, instead of a stripped down version, for an affordable licensing price. The smaller your budget, the cheaper **Wwise** gets.

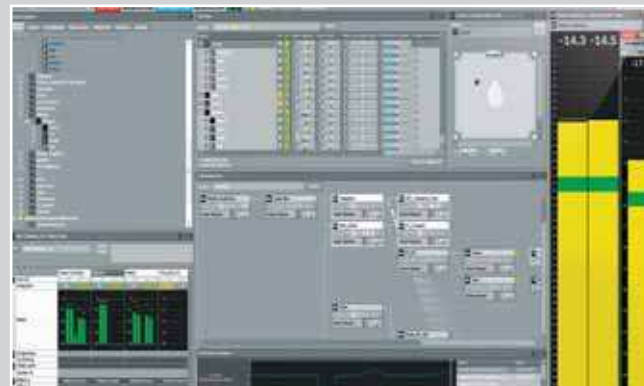
And better yet, Wwise is free to use for non-commercial and academic games. Audiokinetic aims to empower sound designers and audio programmers with a comprehensive authoring tool for creating exceptional game experiences. The tool is

compatible with Android, iOS, Windows Phone, Nintendo 3DS and PS Vita. Hundreds of titles have used the toolset, including *Limbo*, *Plants vs Zombies 2* and *Solitaire Blitz*.

Audiokinetic VP of products Simon Ashby says: "Wwise increases game quality and reduces production costs. It also reduces the risk related to game production and that's one of the reasons publishers prefer working with Audiokinetic: They know the game will ship without audio problems."

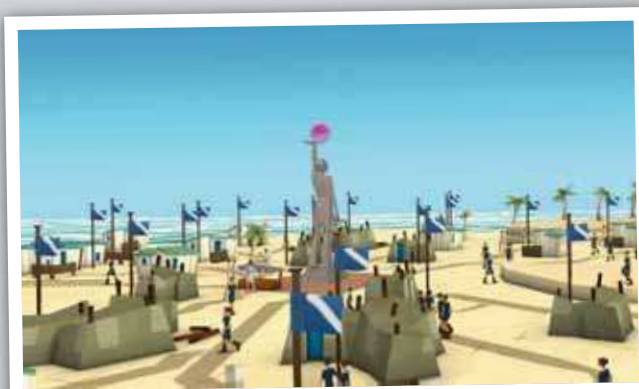
Wwise is available at a variety of licensing prices, and free for non-commercial use.

www.audiokinetic.com



PIPELINES

PERFORCE



ITS ABILITY TO manage not just source code, but all the different media assets involved in modern games development, including art, textures, audio and video, has made **Perforce** a prized technology in games dev.

To give you an idea of its versatility, 22Cans recently used the technology in the creation of its mobile title, *Godus* (left).

Grimm Bros CEO and Perforce user Ash Monif says: "As an indie developer, there is a strong temptation to cut corners and reduce costs, however we will not compromise creating a great game. It's a tremendous help to have free use of all the full-featured

Perforce products. Grimm Bros can now perform with the same toolset as the biggest and most successful studios."

Perforce EMEA marketing director Mark Warren adds: "Version management is a critical platform element to support the entire development pipeline from requirements to release. It's one of the foundational capabilities that you should get right early on so you can concentrate on delivering your next great product."

Perforce Enterprise Version Management starts from £187 (\$300).

www.perforce.com



A return to Maya

As the charge to support indies continues, Autodesk has unveiled Maya LT, conceived specifically for small teams. Senior marketing manager Greg Castle tells **Will Freeman** why the new tool matters, and what it consists of

When did Autodesk decide to target the indie audience with Maya LT?

Like most people in the games industry, we've always been really excited about what's going on in indie, where they're pushing the boundaries not just of gameplay design, but also production and the way they do things. We're also really enthusiastic about all the support for the indies from the big guys that's going on; things like what Sony and Microsoft are doing. And indie is something we're very keen to support in any way possible. So we took a good look at our product line, and it was clear that with some work it was really well positioned to serve indie developers.

So how did you begin to work out how to change the product to better suit indies?

Well, we asked ourselves about what they really care about in terms of tools, and what they care about is having a strong userbase behind a tool, accessing production-proven tools, and they need flexible pricing. A strong userbase and production-proven tools is something we have got at Autodesk, and looking at our tools, Maya is probably the strongest for gaming in that regard. But flexible pricing is something we didn't have. So we looked at Maya closely – because its functioning on Mac and PC, making it the obvious choice in terms of indies – and we thought about Maya's appeal to indies.

And you've changed what Maya offers significantly for the LT edition?

Maya is a big and very powerful product with loads of different features. When you look at games development, and especially smaller

studios, they are really only using a small subset of what Maya offers.

We figured that there was a bunch of things that weren't really applicable in Maya that we could pull out to enable us to decrease the price significantly.

How will that pricing work?

Well, the full version of Maya is priced at around \$3500, and we're offering LT at \$795, with a rental pricing option, to make it easier

“What indies care about is having a strong userbase behind a tool, accessing production proven tools, and flexible pricing.”

Greg Castle, Autodesk

for smaller developers who find themselves scaling up and scaling down, or freelance developers who want to easily charge back the costs of tools to whoever they are doing a piece of work for. The rental price is \$50 a month, and if you go up and purchase more time, it could go as low as \$30 a month.

We did a tonne of research and a tonne of focus groups, working with indie developers to what price point they would feel is acceptable, and to work out what we could legitimately charge, and we've arrived at a cost price we feel is fair.

Let's move onto the feature set. How is Maya LT different from the full Maya?

In terms of the feature set, some of the surplus stuff includes some of the rendering, which is used in Maya by those in the film, television and animation industries, for example, but for games developers they are using the renderer of the game engine. With Viewport 2.0, which is available in Maya, and the DirectX 11 support, it's a lot more of a 'what you see is what you get' situation. What you see in Viewport is an accurate depiction of what you'll get in the game engine, so the need for the renderer just wasn't there. So we pulled out the renderer, so the hardware and software renderer, Mental Ray and Render Map, isn't in there. We did keep in Turtle Renderer to give indies access to more realistic light-baking into scenes.

There's also the ability to do playblasts, because we saw an increasing number of indies are developing 2D games using 3D models, just because it's easier in terms of the animating process.

That's one of the main differences. Another, that we did to maintain the difference between the larger Maya customers and the indie games developers using LT, is that you can import and modify models of any size, but when you export there's a limit on the polys you can export in LT. So when you export in FBX there's a 25,000 per-seat poly limit on assets that you create in Maya LT. That limit has jumped around quite a bit, with devices continuing to improve their fidelity and resolutions and stuff like that, and its something we can adjust quite easily in the future, but the models and the things we've



seen come out of developers that are under that 25,000 cap is more than adequate for what we see these smaller developers will need.

There are a couple of other things – like the particle effects and the hair that indie studios aren't really using – that we pulled out, but we decreased the price by a tremendous amount, so we needed to keep that differentiation there between our full tools and LT.

Will we see LT updates in tandem with new Maya releases, or are the products more separated than that?

The nice thing about Maya LT is that it's on a totally separate release schedule, and updates will be coming a lot more regularly than with Maya, because the way things are moving with indie development is so fast. We have a really nimble team of ninjas internally working on this, adding in new features, workflows and integrations that are built specifically for indie games makers. We're trying to create a really customised tool specifically for this audience of small teams.

Does Autodesk have any sense that LT could serve as an introduction to Maya for studios that may grow and one day need the full Maya product?

We hope that happens with Maya LT. We're really trying to cater the learning materials as well, for people who are less familiar with our products, and see LT as something that could be an on-ramp for people looking to get further into games development – perhaps people that are moving from 2D to building 3D assets for their games. And LT and Maya

are comparable in many ways. LT spits out FBX, which can be used on any of our larger tools, for example. The pipelines are completely interoperable, but it stays within the limitations of FBX to start with.

And what about indies new to Autodesk products. How have you made LT welcoming to them?

We're working on materials specific to people who are newer to Maya, who are using

“We really want to embrace this notion of indie artists as a very specific part of the indie developer community.”

Greg Castle, Autodesk

specific workflows, for example, with Unity or even fully-2D game engines. We are working on plenty of very focused learning materials for those guys.

And you're already working with select partner indies in building Maya LT?

Absolutely. We've had a beta that has been out there for maybe five months, and there's a lot of different developers out there on that beta that are working with the product. We've been taking under consideration a lot of feedback that they've given us.

At launch, and shortly thereafter, we'll start to feature works that are built using Maya LT, so you'll start to see what's possible. But right now all of the projects already using Maya LT are completely under wraps.

With so many tools integrating with Maya, could Maya LT encourage even more middleware outfits to start to embrace indies? And on that note, have you made the job of supporting indies easier now, and could you have done it sooner?

Let's be honest. This has been a long time coming, and I would have liked us to have had this out there a while ago. We are definitely with Maya LT, as I mentioned before, working on a new approach, where we are really trying to support integration with the tools community, and it is a real opportunity to do so. Yes, we are doing it, but, again, it's a little early for saying too much more. I have beers with the Project Anarchy guys on almost a weekly basis now, and we work with the Unity guys too. We're really trying to integrate as much as possible and provide the best end user experience for everyone, so they don't have to choose one thing or another; we want everything to work for everyone.

On a related note, we're really trying to take our Area website to the next level for the indie artist. We really want to embrace this notion of indie artists, as a very specific part of the indie developer community, and so we're providing lots of resources and support specifically for the indie artists. We're really banking on that community being a part of Maya LT and its success. ■

area.autodesk.com



Putting the Autodesk tech into the hands of small teams with Maya LT (main images, left and right) could serve to encourage more middleware to adapt to support indies, suggests Greg Castle (above)



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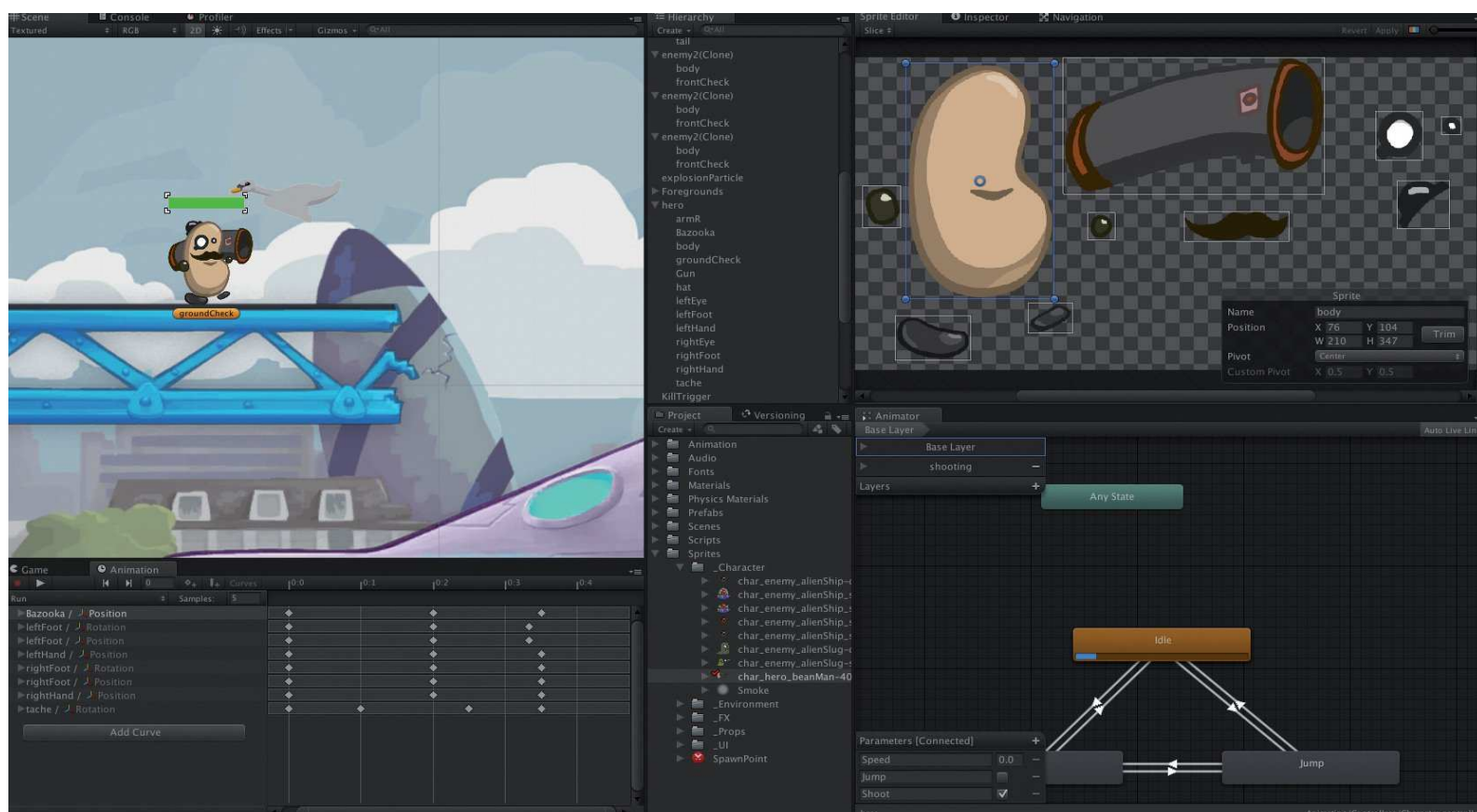
KEY RELEASE

Will Freeman looks at a new dawn for 2D that comes with Unity's 4.3 update

What is it? A new set of 2D-focused tools and workflows for the Unity engine and editor, to be delivered as part of Unity 4.3

Company: Unity Technologies

www.unity3d.com



SEEING A 2D game made in Unity is nothing new in itself.

For many years savvy developers have been using the engine to build games constrained to two axes; so much so that it is easy to forget that Unity made its impact on the games industry by bringing a 3D engine to the masses.

More recently, the Unity Asset Store has let the technology's vast user community craft and release their own 2D-focused extensions, but one fact remains. Until now, Unity has not at its core been tailored for 2D games development.

"A lot of people use Unity for 2D, and it's perfectly doable. But we just looked at the workflows, and there were some fundamental sillinesses," admits the outfit's typically frank founder David Helgason, speaking to *Develop*. "People were kind of fighting the engine, and there were some tricks you had to play to do it, especially to do really complex 2D games with lots of layers and stuff."

BEYOND THE 2D HORIZON

And so it was that the Unity team took a long, hard look at what was needed to properly support 2D games developers at a base level. After much work, a range of 2D tools and workflows – such as native support for sprites for the engine and editor – have been fleshed out, and are now ready for users as part of Unity's 4.3 update, currently in beta, and due during autumn.

"We also looked at other 2D engines, and I usually try not to say anything about others,

but when we looked at what other 2D engines are doing, it's all kind of primitive," states Helgason. "There weren't really any workflows that we fell in love with and thought that game developers were well served with. Either the low-level source code bases that they have to hack or the really contrived tools really weren't designed for it in the first place."

“People were kind of fighting the engine, and there were some tricks you had to play, especially to do really complex 2D games.”

David Helgason, Unity

SCENE TO BE BELIEVED

Unity 4.3's new 2D-focused elements include a dedicated scene view, which with it debut specialised 2D scene manipulation tools. A devoted 2D physics engine that supports the likes of rigid bodies, colliders of joints will also be made available, as will a graded animation window with a dopesheet-style view and quicker parameter animation. Integration with the animator to enable for relatively simple creation states for 2D animated characters will also be introduced.

Initially available to beta-registered users, the '2D-first' updates to Unity are supported by a sample product to demonstrate how the

tools function, which is conceived to highlight the parallels between Unity's 3D and 2D workflows.

STRIPPED DOWN

"We're also focusing on how to strip the engine down so you don't have to ship the entire 3D engine when you make a pure 2D game," reveals Helgason.

"The whole thing could be more lightweight when not shipping a full-3D engine, and so that's also something we're going to be working on."

For the time being no separately licensed version of Unity's 2D technology is imminent, but the company is quick to highlight that over the coming months and years many more features will be added.

"We're actually pretty much putting almost all of the 2D into the free version," confirms Helgason to *Develop*. "So you can pretty much do anything with 2D you want without paying us. It just feels right. Simple technology is less maintenance and I think it's only fair we don't charge so much for it."

And Helgason is quietly confident that, bolstered by its new functionality, Unity's technology is now set to wow those familiar with parallel 2D games development technology already available on the middleware market.

"I think even the stuff we're launching on day one is going to be ahead of what anyone else is giving," he offers *Develop* in conclusion. "And then, of course, we are really going to try and make it perfectly 'Unity-style' over the next 12 months." ■



The Unity 2D toolset in action (main), and the outfit's CEO David Helgason, who has, with his team, flushed workflow 'silliness' from the engine

UNREAL DIARIES

Lionhead takes a Fabled leap onto Xbox One with Unreal Engine 4



Lionhead is bringing its next-gen *Fable Legends* experience to Xbox One using Unreal Engine 4

LIONHEAD STUDIOS' CONTRIBUTIONS to the Xbox platform and the modern gaming landscape via its *Fable* franchise are indisputable, with the critically acclaimed, best-selling series approaching its ten-year anniversary. Lionhead previously turned to Unreal Engine tools to build *Fable: The Journey*, which brought an adventure ripe with storytelling and beautiful scenery to Xbox 360 with integrated Kinect motion controls.

The Guildford-based team is now working toward the release of *Fable Anniversary* for Xbox 360, which uses Unreal Engine 3 to bring the gameplay and story of the original *Fable* together with re-mastered high-definition audio and visuals, as well as *Fable Legends*, which will define the world of

Albion on Xbox One, all powered by Unreal Engine 4.

AN UNREAL CATALYST

According to Lionhead executive producer Geoff Smith, adopting Unreal Engine technology across its projects has been a massive win in terms of productivity and efficiency – especially with regard to *Fable Legends*, which brings a new campaign as well as four-player co-op and SmartGlass integration to the series.

"The output and quality of what can be achieved with Unreal is an order of magnitude more advanced than what we could do if we tried to write everything ourselves. Instead of using bespoke programs to build levels, particles, lighting and cut scenes, it's now all in one place. Asset discovery is in one place. Version control is in one place. We use a single system which comes with all of the market-leading parts. As content creators, we used to have to wait for months or years for a stable toolset, but now we're able to get straight into building games."

Crafting a next-gen experience for unreleased hardware is no small task, and as such Lionhead's developers count on Unreal Engine 4 to help make the most of its talents. "The architecture and toolset provided by UE4 allows us to dive straight into making this without waiting for tech to come up to scratch. Immediately we are able to fully utilise the incredible team we have available. We've been able to get assets into the game in double-quick time, plus we're getting visual feedback in a matter of seconds. All this,

combined with the flexibility of the materials and shaders, leads to a better looking game."

MEGA-PALETTES AND UBER-BUILDING

Fable has always been about colourful, beautiful worlds, and Lionhead is set to deliver its richest interactive realm to date. "We really appreciate how our assets look in-game," affirms Lionhead's art manager Mark Smart. "As an artist you want everything to look fantastic. It's possible to drill right down into quite complex shader instructions in UE4. There are many parameters that can be tweaked and revised. As we are aiming for a unique style, we needed to unify our focus. Due to the engine's ease and flexibility, we've set up master materials for a consistent look. Using these tool pipelines frees artists up to concentrate on the artwork."

Unreal Engine 4's new Blueprints system encourages people across disciplines to express their vision directly through the tools, reveals Ben Brooks, lead content designer at Lionhead. "Blueprints have turned our designers into implementers. Where previously, they'd have written a document, our designers can now build a working prototype to show off their ideas. Our artists can tweak the size, shape and scale of assets across everything in the level or a single set of assets. They can apply moss to specific rocks with simple sliders or light their world in real time. Our designers can work directly with the game to set up all the characters or build all the AI routines, leaving our programmers free to work on other needs."

Going on to describe how Blueprints lighten the load on scarce programming resources, Brooks says: "The number of times designers can iterate on an idea has increased massively while the time it takes to do these iterations has dropped dramatically. We can have an idea prototyped within hours of discussing it. The toolset itself is also very mature with core systems in place from day one. We can build on these foundations and make something unique from both a gameplay and graphical perspective, and our programmers can get on with making refinements and bespoke features."

Smith concludes that UE4's Blueprints and asset systems provide a huge advantage in terms of scalability and flexibility: "Functionality can be boxed off and reused easily, and individuals can do their own work without treading on others' toes. The toolset allows us to easily group assets and systems together into Blueprints and distribute them across the team, and we can even customise Blueprints to scale the functionality required. One person might need to be able to tweak variables, or adjust material colour, and so on. We can do all of that without having to ever go back to a programmer and request new functionality. The complexity of game development can be scaled for each." ■

www.lionhead.com

UPCOMING EPIC ATTENDED EVENTS



IndieCade 2013
October 3rd to 6th
Los Angeles, USA

GDC Next 2013
November 5th to 7th
Los Angeles, USA

Montreal International Game Summit
November 11th to 12th
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MICROSOFT SPOTLIGHT

Creative England and Microsoft have launched the Greenshoots initiative, which is set to help fund up-and-coming studios

The programme: Greenshoots

Who are they? Microsoft and Creative England are working on the initiative. Creative England is an agency devoted to funding and supporting all creative industries across its home nation

What is it? A funding and support programme to help ten studios bring a game to mobile and tablet platforms
greenshoots.creativeengland.co.uk



OF ALL THE funding and support bodies that serve games developers in the UK, Creative England is a relatively new entity.

Formed two years ago to serve the entire spectrum of creative industries in the country, the agency this year set up a devoted games division, which debuted with the GamesLab programme. Still underway, the initiative supports developers in the South West of England, and boasts an impressive £1 million pool.

But Creative England's ambitions to support games makers does not stop in the West country, and recently the body has collaborated with Microsoft to debut the Greenshoots programme, which offers up to ten independent developer start-ups funding of as much as £25,000, along with a wealth of technology, services and technical support.

"As part of my strategy to get Creative England more involved in games, I was looking to strike up some partnerships with key industry players, and Microsoft are one of the biggest players in the industry," explains Jaspal Sohal, who stepped up as Creative England's head of games this year.

"We approached them and told them about what we do, and what we want to do in the games space, having seen that they'd been very proactive in their own way making their technology and systems more available and more open to developers that wanted to use them," he continues.

THE SEED OF AN IDEA

That conversation was the catalyst that led to the establishment of the Greenshoots initiative. As well as the cash injection from Creative England, Greenshoots provides eligible companies access to Microsoft's long-standing

BizSpark programme to support the studios involved with a wealth of development software, expert guidance, and importantly, access to Microsoft's cloud back-end.

"We have created something that has brought together investment and technological nous, and it's proving to be a really good partnership," explains Sohal. "We really want to help these ten studios develop tablet, indie or mobile games, be they

"We have created something that has brought together investment and tech nous, and it's proving to be really good."

Jaspal Sohal, Creative England

freemium or premium, and a really key point on this is that exclusivity to Microsoft platforms is not a requirement."

Unusually for a project backed by a giant tech company famed for its hardware, Greenshoots welcomes teams interested in not just Microsoft's own OSes, but cross-platform releases that also target the likes of Android, iOS and BlackBerry. Greenshoots-backed cross-platform games must support Windows 8 and Windows Phone 8, but they are in no way discouraged from developing across all platforms. Greenshoots has been conceived to liberate – and not constrain – up-and-coming developers.

"We're looking for studios that are less than five years old. They don't necessarily have to have a stable of released products,"

states Sohal. "This could even be for their first product, but we are looking for studios that are fairly well into their company development cycle. The application process started on September 26th, and it will close fairly quickly, by October 18th, so it will all happen rather fast."

A ROUTE TO SUCCESS

Access to funds will be granted more rapidly than with traditional funding methods, so interested parties should apply as soon as possible.

"It's a revenue share investment, so they can receive up to £25,000, and they can use that to complete development on a game or use it for marketing," elaborates Sohal, moving on to the technical details of how Greenshoots functions. "They obviously need to provide us with a very brief overview of how they plan to spend that, and then after they have finished and released their game, as soon as it begins to start to make revenue, 50 per cent of that revenue is paid until that £25,000 is repaid."

No interest is added to the investment, so only the capital amount needs to be paid back. And, ultimately, if the game fails to make revenue, repayments are not required. The funding is for specific titles, and ports or extensions to existing games are not eligible.

Such is Creative England's remit, the offer is open to the North West, North East, Yorkshire, Humberside, West Midlands, Warwickshire, Cornwall, Devon, Dorset, Somerset, Bristol and Bath. Funds will be allocated this November.

Those interested in applying should visit the official Greenshoots website, which sets out the application process and full terms and conditions. ■

greenshoots.creativeengland.co.uk

Creative England's Jaspal Sohal, who with the Microsoft team is hoping to put ten games studios on the road to greatness

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GEOMERICS SPOTLIGHT

A look at Geomerics' and ARM's drive for console-quality mobile graphics

The Mali architecture

Company: ARM

The Geomerics effect: Geomerics is helping make mobile games more striking than ever
malideveloper.arm.com



full-screen G-buffer with at least 16 bytes-per-pixel, stored in multiple render targets. It will write the entire buffer out and then read it in again at least once per frame, at a cost of five millijoules each way. At 60fps, that's a bandwidth load of four gigabytes per second, and an energy cost of 600 mW – a large fraction of a typical smartphone or tablet GPU power budget. And that's just for data movement – you haven't done any rendering yet," continues Tom. "We figured there had to be a better way."

"One idea we had been working on internally was to associate a small amount (16 bytes) of persistent local memory with each pixel, shared between all of the triangles that cover that pixel. Because the Mali architecture is tile-based, we can keep this memory on-chip, and never move it across the system bus. Our in-house experiments were promising, but we wanted to know if it could be used in an industrial-strength lighting engine. That was why we approached Geomerics."

THE MOBILE ENLIGHTENMENT

Geomerics first demoed its Enlighten tech on mobile devices at GDC 2012. At GDC 2013 they added in support for cubemaps, bringing dynamic high-quality glossy lighting to mobile devices. With devs starting to licence Enlighten for mobile they were an obvious company for ARM to approach.

"I was very keen to see what you could do with persistent on-chip memory," says Martin. "Given our focus on lighting research, the obvious area to experiment with was using multiple lights in a standard deferred lighting setup, but with the G-buffer data stored on-chip. This was made possible through an experimental driver extension that ARM gave us access to. Using this approach we were able to light a scene on a Mali-T604 running at 720p with up to 100 dynamic lights and Enlighten running to fill in the global illumination. This was a real step forward for mobile devices."

The end result of the collaborative initiative was presented at SIGGRAPH Mobile this July, and has generated considerable interest among the mobile community. "This reinforces a message we have been pushing for some time now. We all need to re-think how we do graphics on mobile devices. The desktop graphics pipeline is simply not appropriate for a world where power constraints are everything. It is often better to repeat a calculation in different places that is trying to move the results around," said Martin.

This research is likely to represent the start of a longer term effort between ARM and Geomerics. "We are really pioneering a drive towards higher quality graphics on mobile devices" says founder Dr Chris Doran. "When we look at what developers want from Enlighten on mobile it is clear that they are after a different set of technologies to the PC and console guys. They want to know how to get the best graphics out of these devices, and this is what we are starting to offer." ■

www.geomerics.com



Geomerics' work with ARM's Mali developer boards (main) is pushing what is possible on mobiles to new levels, thanks to the effort of staff like Geomerics' head of technology Sam Martin (top) and ARM's Tom Olson (bottom)

GEOMERICS IS COMMITTED to pushing the boundaries of graphics capabilities on all platforms. When it comes to mobile that brings some interesting new challenges. Of course, one British company is synonymous with mobile platforms: ARM. The Cambridge-based company licenses designs for the CPUs in the vast majority of the world's mobile devices, and is making increasing inroads in the GPU space with its Mali architecture.

The ARM business model is based on the concept of fostering an ecosystem of companies with their own individual targets and ambitions. Part of this philosophy is a commitment to collaborative research with partners interested in furthering mobile technology. In particular, the team working on its Mali processors are keen to work with teams experienced in delivering high-end graphics on consoles. ARM is committed to bringing high-end gaming experiences to mobile devices, and that means encouraging research into rendering, graphics, control schemes and a wealth of other areas.

To push its mobile rendering research forward, ARM chose to collaborate with Geomerics, also located in Cambridge. Geomerics was already committed to researching new techniques for mobile platforms through an EU-funded collaborative project (the LPGPU project). Head of technology Sam Martin comments: "Through our EU project we already had a

good handle on porting Enlighten to mobile, and the challenges faced when bringing high-end content to low-powered devices. This put us in a great position to work with ARM when they approached us."

“Given our focus on lighting research, the obvious area to experiment with was multiple lights in a standard deferred lighting setup.”

Sam Martin, Geomerics

GREAT MINDS THINK ALIKE

The teams in ARM and Geomerics had independently come to the same realisation: that memory bandwidth had become the key bottleneck on mobile devices.

"The problem boils down to a single number: 150 picojoules per byte. That's the energy cost of moving data between the GPU and memory. The number is decreasing with time, but not as fast as bandwidth needs are growing. The result is that mobile GPUs will be bandwidth- and power-limited for the foreseeable future," says Tom Olson of ARM.

"If you think about a modern deferred shading pipeline, it will typically use a

HEARD ABOUT

Paul Lipson, music and audio director for Microsoft, discusses making music for Xbox with **John Broomhall**

PAUL LIPSON IS music and audio director for Microsoft Studios.

He is known for his work managing numerous music commissions for key Xbox franchises. *Develop* caught up with Lipson at Game Music Connect to discuss what that process involves, and mull over what informs composer choice in the realm of high-level game audio orchestration.

Can you outline your role, and what makes it unique?

I have an interesting role with the Central Media Team at Microsoft Studios, particularly working as both music and audio director. Central Media can be likened to a team of industry veterans sitting at the centre of the wheel, with creative direction and production support that reaches out across our portfolio. It certainly is an exciting challenge for us and a thrill to partner with our internal first-party and third-party development teams to advance the all-up content quality of projects.

Since joining the team at Microsoft, I've been keenly focused on advancing our music pipelines, and have been working hard with my colleagues to raise the bar across all of our platforms including Xbox One, Xbox 360, and Windows 8 PC, tablet, and phone.

This includes all aspects of music creation, from composition and composer management to production pipelines, recording, integration, technology, budgets, and soundtrack releases.

I also work as the *Halo* publishing audio director, supporting the various audio disciplines across published titles in the *Halo* universe with our excellent team at 343 Industries. On the audio community side of things, I'm the vice-chairman of the Board of Directors of the Game Audio Network, and participate on board with the National Academy of Recording Arts and Sciences (the Grammy's), and the academy of Interactive Arts and Sciences.

How early do you like to get involved on audio projects?

As early as humanly possible. In all seriousness, I've been advocating for much earlier involvement with composers and content teams – quite early in pre-production and concept phases. Music is foundational IP for the worlds we are creating, and getting involved early means we can sync with the narrative, design and tech teams to make sure we can best support the stories we want to tell.

Cross-discipline content can often drive systems and narrative choices very early on. It's amazing to see visual artists working with early music prototypes and seeing first hand how inspiring those results can be. The engines of inspiration can move both ways if everyone commits to working closely, and it almost always leads to stronger results further down the road.



What do you look for in a composer?

I probably get that question asked more than anything else.

Let's start out with the notion of trust and true collaboration. I always look for composers who understand how to build trust, and understand that how they work is just as important as the music they produce. It is certainly a given that our creative bar at Microsoft Studios is extremely high – and that aesthetic excellence and a perfected craft is baseline – but working collaboratively and understanding that making games is essentially a team sport is paramount to the partners we choose. Having an independent vision is also something we look for – that differentiating X-factor.

I often get demo material from young composers trying to do it all, and they set the stage as if it were a shoe sale, looking at all the styles for all occasions. The truth is that as a composer and conservatory-trained musician myself, I'm drawn to chance-takers who know how to enhance narrative. At the end of the day, it's the ability to enhance a story and create deep IP for a franchise that will win. It takes a lot of trust to collaborate with someone who is going to materially contribute to huge dollar bets – which games

often are. So if you can lead with excellence, a unique identity, service, support, proven capability and experience, then you'll find yourself in a great position to support long-term partnerships and big game franchises.

How will music in Xbox games develop from here?

We are absolutely bullish about driving innovation and quality that defines the next generation of games. Music for Xbox experiences will certainly be innovative, and we have some new approaches to integration and content development that will be defining the current and future experiences we are creating. Looking into the crystal ball, I think finding new ways to develop and express quality will become the defining traits of the future. The emotional dynamic range in games is widening, and music is pushing a new era of emotional efficacy in interactivity and storytelling. ■



Among his many responsibilities, Paul Lipson (above) counts composition and composer management, production pipelines, recording, integration, technology, budgets and soundtrack releases, serving high-profile series like *Halo* (main)



John Broomhall is a game audio specialist creating and directing music, sound and dialogue. Find him at:

develop@johnbroomhall.co.uk
www.johnbroomhall.co.uk | @JohnBroomhall

MADE WITH MARMALADE

Marmalade on welcoming the huge opportunity Tizen offers game devs

Space Tap

Developer: Playing Species

Platforms: iOS, BlackBerry 10, Android, Tizen (in development)

Why Marmalade Mattered: The SDK let Playing Species target the coming OS with the existing Space Tap source code



EXCITEMENT AND ANTICIPATION continues to build around Tizen, and Marmalade is at the forefront of those preparing savvy games developers with an open mind to cross-platform for its arrival.

With a wealth of backing from both Intel and Samsung, the forthcoming mobile OS looks poised to be a significant global success.

Of course, the idea of targeting multiple platforms can be daunting, even for those embracing established mobile devices. In that context, the idea of working towards a release for the likes of Tizen may be something many developers – small or large – deem beyond their capacity.

But that needn't be the case. The Marmalade SDK is famed for its powerful single code base development offering, and is increasingly popular, in part because of its familiar C++ environment. Devotees to the Marmalade SDK often cite its ease of porting as a core reason to work with the platform – as covered in *Develop* in numerous previous issues. Put simply, the tech lets studios create a game with that single code base, before distributing to platforms in a relatively effortless manner. And, as confirmed back in July this year, the SDK is among the first in the world to support Tizen.

A DIFFERENT SPECIES

One developer using Marmalade to target Tizen is Playing Species, which is taking its latest game *Space Tap* to the coming OS.

"At the beginning we tried several single platforms separately," explains CTO Daniel Musil of Playing Species' approach to cross-platform, and its journey to using the Marmalade SDK. "For a small team, it is

overkill to know all the platforms' differences well, so one of the key points was to find a multiplatform solution."

That solution was Marmalade, which empowered Musil and his colleagues enough that they conceived the core concept of *Space Tap*; an action-puzzle title that began life as an evening project made for fun. Playing Species is a board game conversions expert, and closely aligned with tabletop publisher Czech Games Edition, but through Marmalade

We found Marmalade to be the solution for quickly developing games in C++ targeting several platforms at once.

Daniel Musil, Playing Species

it has managed to push the boundaries of the games it makes, and target an ambitious range of platforms, including Tizen.

"Marmalade gave us their beta SDK several times," explains Musil. "There were few bugs. But there are always some. And there were no show-stoppers, and every following iteration of SDK was better and better. [Generally we were] working directly on the new devices from the very beginning and Tizen wasn't any different. A few bugs were quickly addressed by Marmalade, which was no big deal. We are happy we can address the new platforms with our games so easily."

TIZEN THE PRIZE

PLAYING SPECIES ISN'T the only developer harnessing the power of Marmalade to develop a game for the Tizen platform. Other users of the SDK include football game developer Sports Director, and prolific tower defence specialist ArtOfBytes.

ArtOfBytes' general manager Tanja Kobzar is part of a team taking iconic zombie IP to Tizen in the form of *Night of the Living Dead Defence*, which has already enjoyed release on iOS, Android, Nook and BlackBerry. And her team's experience of porting the game to Tizen with Marmalade has been encouragingly simple.

"There are not many differences in development," she says of the process. "Marmalade allows us to create a build for this platform using the same project as for others. The only difference is the operating system itself, which requires a few tools to be installed."

Similarly, Sports Director's lead programmer and designer Roger Womack has found taking he and his sole colleague's game *Football Director* to Tizen a breeze with Marmalade.

"So far Tizen has all been handled by the Marmalade SDK," he explains. "We started evaluating Marmalade approximately 14 months ago."

"We chose it due to its use of C++, the wide range of devices it supported, and the support and accessibility of the company."

www.artofbytes.com

www.sportsdirector.co.uk

THE EARLY BIRDS

The fact is that Tizen presents a substantial opportunity for mobile developers, and just as Marmalade makes it simple to port games to established mobile platforms, it lets studios of any size take their creations to the coming OS.

And Playing Species isn't the only studio already enjoying how easy it is to harness the potential of Tizen with Marmalade (see panel: *Tizen the prize*), but the Czech outfit does demonstrate how being forward thinking, picking the right tools and daring to target new platforms can place you ahead of the pack. And that's an enviable position on a platform with the upcoming clout of Tizen, because for the first to market, there should be rich pickings.

"We were a very small team working in our spare time," concludes Musil. "We found Marmalade to be the solution for us to quickly develop the games in C++ targeting several platforms at once. It was amazing how much time Marmalade saved us." ■

www.facebook.com/playingpecies

www.madewithmarmalade.com

Space Tap in action (main) and, top-to-bottom above, Sports Director's Roger Womack, ArtOfBytes' Tanja Kobzar, and Playing Species' Daniel Musil



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Wwise Tour Europe 2013

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Audiokinetic cordially invites you to the next Wwise Tour 2013 to be held in London and Hamburg. Here is what we have planned for the event:

Get to know Bioshock Infinite and Wwise

Justin Mullins, Audio Lead at 2K Australia and Erik Irland, Senior Gameplay Programmer at Irrational Games will highlight their use of Wwise in **Bioshock Infinite**.

Get to know the Auro-3D® technology suite

Auro Technologies will demonstrate Auro-3D® and the powerful authoring capabilities of the Auro-3D® suite, which allows game audio developers to create revolutionary audio in 3D using a Wwise plugin.

Get to know Wwise

Simon Ashby, VP Products at Audiokinetic, will present some of the latest and greatest Wwise features as well as some new upcoming features.

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October 2013

London, UK – October 29th
2pm to 7pm
High Commission of Canada

Hamburg, Germany – October 31st
2pm to 7pm
East Hotel

Questions

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KEY CONTACTS

Amigus www.amigus.com

ARM malideveloper.arm.com

Epic Games www.epicgames.com

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Images courtesy of Criterion Games

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Paul Ross, CTO, Criterion Games

"After some years working as a programmer, I decided to attend the MSc in Games Programming at Hull University. It was probably the best investment of my life. Now I'm a programmer at an AAA studio."

Manuele Bonanno, MSc Graduate

www.mscddegrees.com



RECRUITER HOT SEAT

Leamington Spa's Playground Games is beginning a new chapter. CEO **Trevor Williams** on why that matters to you

What differentiates Playground from other developers?

I think there are a few things about Playground which stand out. Firstly, everything and everyone at Playground has a focus on quality. Gav [Raeburn] and Ralph [Fulton] strive for excellence in everything they do, and that drives through into our processes, workflows and creative decision-making. A lot of games companies are technology-led – in other words, they make creative decisions with reference to what their tech is able to do.

That's not how we work at Playground – we are constantly challenging what we do and striving to do everything better. That is a very rewarding environment.

Our close relationship with Microsoft obviously puts us in a somewhat privileged position. We are well funded and that in itself creates opportunity for what we are able to achieve with our new game. There are only a handful of independent developers worldwide working on showcase Xbox One titles, so it's great to be part of that group.

The other thing which stands out is the way we recruit. We do not have a traditional recruitment or HR team. Our recruitment is led out by our discipline leads and their management teams. That is pretty onerous on them, but it works really well for both the company and prospective hires. At interview, candidates always get to meet the people they will be working with, and usually a few of the directors too. That makes our recruitment process very transparent.

How many staff are you currently looking to take on?

We are currently looking to add about 25 new people to our team, although some of those are contract roles. They are across all disciplines – programming, art and design – but there are also a few specialist roles which we realised we needed after *Forza Horizon* was completed.

What perks or privileges are available to staff at the studio?

We offer a good remuneration package. Our salaries and benefits are very competitive, but I think what stands out is our ongoing commitment to our staff. There's no point hiring the best people and then not looking after them. And that goes for their families too. A lot of our staff moved from outside the area, outside of the UK in some cases, so we try to help them integrate. Simple stuff, like running a Facebook group for partners, pub evenings and so on. We just had our summer barbecue and everyone brought their kids along. It was mayhem.

What should aspiring developers do with their CV to get to an interview?

It's always worth checking our website for open positions. We always keep that current. If you are interested in applying for one of the roles, then you should drop your CV into our tellmemore@playground-games.com inbox. That is our recruitment 'clearing house' and is sorted numerous times a day. The CV and covering email will be passed onto the appropriate discipline



GET THAT JOB

Development specialists offer advice on how you can bag that career leap

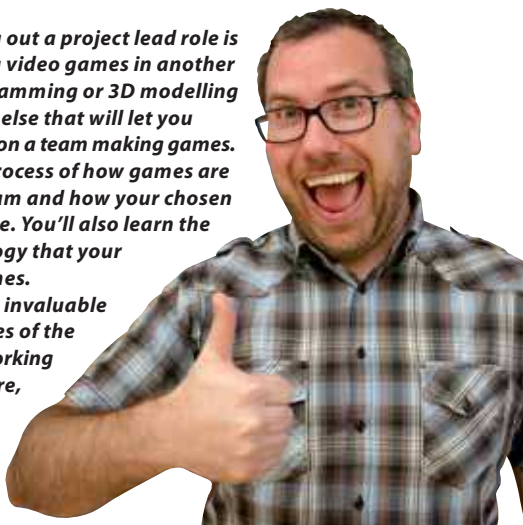
THIS MONTH: PROJECT LEAD

"My best advice for seeking out a project lead role is to learn the craft of making video games in another discipline first. Learn programming or 3D modelling or animation or something else that will let you become a valuable member on a team making games."

"You'll learn the entire process of how games are made, how to work on a team and how your chosen discipline fits into the puzzle. You'll also learn the ins and outs of the technology that your company uses to make games."

"All of this information is invaluable when you step into the shoes of the team leader. You'll have a working knowledge of team structure, process and technology at your disposal."

Brad Muir,
 Project Lead,
 Double Fine Productions



SIX-SECOND STUDIO SPOTLIGHT



■ Roll7 started life as a digital agency that realised after four years that its "games IP was way more commercially viable and fun than gun for hire work," says creative director John Ribbins

■ Based in New Cross, London, its staff is currently about 10 people

■ Its directors are Simon Bennett, Tom Hegarty and Ribbins

■ Roll7 strives to develop "hard as nails, retro pixel goodness – games that hark back to our youth in the 80s"

■ It currently develops for PC, Mac, PS Vita and iOS

■ *OlliOlli*, its 2D skateboarding platformer, hits PS Vita exclusively this Christmas. Next year it has one further confirmed game.
www.roll7.co.uk



BIO

Name: Trevor Williams
Title: Chief Operating Officer
Developer: Playground Games
www.playground-games.com

“ We do not have a traditional recruitment or HR team. Our recruitment is led out by our discipline leads. ”

Trevor Williams,
 Playground Games

lead. It's worth stating on the covering email which post you are applying for.

Who is the best interviewee you have ever had and what was it they did that impressed you?

I'm not sure I recall any particular interviewee who stands out, but I have interviewed some great people over the years. I try to filter out how well they interview and focus on how well they will be able to do the job.

For instance, do they casually demonstrate deep knowledge and experience in the discipline you are hiring for?

And who was the worst?

An interview is a very artificial scenario – particularly for development staff. It can make people very nervous and cause them to do and say some quite strange things.

I've had people fall asleep, faint and one guy was actually physically sick. He blew chunks in the lobby.

But I think the worst crime is when candidates decide not to turn up because they have taken another job. That's happened a couple of times. All it takes is a phone call.

What advice would you give jobseekers for a successful interview at Playground?

Be calm, be respectful and demonstrate you can do the job.

The interviewers at Playground are never trying to trip you up. They just want to know that if you do join our team, you will be able to make the game better.

If your studio has recruited talent internationally, what was the process like for your studio and for the applicant?

We have hired about a dozen people from Europe and North America, but we have never hired anyone who needed us to sponsor their visa – although that's purely coincidence rather than avoidance. They either had EU citizenship or ancestry visas.

We try to gauge how committed they are to living in another country and how long they may stick around. From experience, international hires are much more likely to leave and go home. Two years seems to be the sweet spot. So they join us for a project and then move on, which is fine.

Why should developers join a large studio when indie and self-publishing have become so much more accessible?

I think it's really a matter of security. Indie development and self-publishing is absolutely accessible, but just because it's easy to set up on your own doesn't mean you should. It's a tough life being an indie dev. Not everyone is suited to running their own company.

I'd say that on average, an experienced developer is going to earn more working at Playground than working on their own indie project. There are obviously exceptions to that, but I think for many people, a well paid, stable job works for them.

And I think Xbox One is a big pull for a lot of people. Working on cutting-edge technology is challenging, but rewarding.

NEW STUDIO ALERT!

FORMER ROCK BAND designer Dan Teasdale and his mystery draped partner in crime named Panzer co-founded **No Goblin** in July 2013, in Seattle, Washington.

"As a company, we exist to make fun original titles with unique gameplay," Teasdale tells *Develop*. "Personally, starting a studio has been something I've wanted to do for a long time. I'm secretly one of those weird people who looks forward to min-maxing their taxes, so combining my game development experience with the logistics of starting a new company has been crazy fun."

CEO and creative director Teasdale worked with Panzer on a number of games projects in the past, and says it has been

great joining forces again to work on new ideas.

For the short term, No Goblin is focused on announcing and releasing its first game – "something that's mechanically fun to play".

Long term, it's looking to stay relatively small.

Teasdale says: "I think being totally invested in a creative endeavour like games development and having a life and a family shouldn't be mutually exclusive concepts. So, sure, we have all of the usual goals like 'being dedicated to making rad games' and 'being part of a fun work family'; but we want to make sure that we still have a real family to go home to at the end of the day."

www.nogoblin.com



MOVERS AND SHAKERS

This month: Creative Assembly, CCP Games, Digital Capital and Develop

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CREATIVE ASSEMBLY ■ Sussex developer Creative Assembly has bolstered its team with two team hires.

GARETH RAMSAY has joined its console team as communications manager, and **AMANDA CUTHBERT** comes to the *Total War* team as free-to-play brand manager.

Joining Creative Assembly to assist on its new *Alien* title, Ramsay will be a key member of the newly formed internal PR and marketing department.

"I couldn't be more excited to join the team and really look forward to working on some truly amazing titles," said Ramsey.

Jon Rooke, brand director, added: "Gareth is an invaluable addition to the team here at Creative Assembly and brings with him a wealth of knowledge and experience gained from his many years working in the industry."

Cuthbert, meanwhile, will apply her past learnings to CA's brand new free-to-play project: *Total War: Arena*.

"I am very happy to be joining such a successful and well respected studio and to help shape the future of the

Total War brand. It is exciting to join Creative Assembly," she said.

Rob Bartholomew, *Total War* brand director, added: "Amanda brings essential free-to-play brand experience with her to the team at CA, which will greatly improve our ability to investigate and respond to that market."



CCP GAMES ■ Eve Online maker CCP Games has hired **OWEN O'BRIEN** as executive producer of *Eve: Valkyrie*, a new VR spaceship dogfighting game

in development at its Newcastle studio. O'Brien will oversee all aspects of *Eve: Valkyrie*'s production.

O'Brien joins CCP following a long career at the award-winning game studio DICE in Stockholm. While at DICE, O'Brien led production of the critically acclaimed *Mirror's Edge*.

"I worked with Owen for many years at DICE," said Sean Decker, senior vice president of production at CCP. "His experience bringing *Mirror's Edge* to market will be invaluable as we work to make virtual reality an actual reality for gamers worldwide."

O'Brien added: "The opportunity to work with a focused, talented and passionate team at the forefront of

game-changing technology is a dream scenario for me."



DIGITAL CAPITAL ■ Digital Capital, an investor in digital entertainment apps and games, has appointed **JONATHAN BUNNEY** as

marketing director.

Bunney brings a wealth of senior experience to the firm, having held positions as vice president of product development and product marketing during his 12-year tenure at EA.

His role will be to lead the global marketing campaigns for Digital Capital's growing portfolio of products.

Todd Tribell, co-founder of Digital Capital, said: "Our unique business model includes full marketing support for our projects so we're very excited that Jonathan will be creating and implementing our marketing campaigns; and we're most fortunate to have him heading the department."

Bunney added: "I'm delighted to be working for a company that truly partners with developers to help them achieve audacious goals. I've always believed that marketing and development should be tightly integrated and am looking forward to building out the strategies."



DEVELOP ■ **JAMES BATCHELOR** (above, left) takes up position as editor of *Develop* this month, as a number of

significant changes occur at the magazine's publisher, Intent Media.

Formerly deputy editor of sister title MCV, Batchelor has succeeded **WILL FREEMAN**, (above, right) who is taking on a contributing editor role on *Develop*.

Freeman has worked in-house for the *Develop* brand for five years.

Elsewhere, **CRAIG CHAPPLE** (bottom) has been promoted to deputy editor after two years as staff writer.

"Although Will is handing over day-to-day *Develop* duties to James, he will still be contributing to *Develop*, which is the only magazine serving the global games development audiences," said editor-in-chief Michael French, who is to become publisher of *Develop* next month, after the departure of Intent Media founder Stuart Dinsey.



Services & Tech Recruiter Hot Seat

NaturalMotion recruiter **Matt Hood** on the firm's technology arm and why you should be part of it

What makes NaturalMotion different from other middleware and tech companies?

Our tools were initially built around scientific research for the University of Oxford. This means that innovation and the desire to create unique and ground-breaking technology for our customers is core to our business.

For tools dev specifically, what disciplines are you most in need of?

We are looking for a wide variety of skill sets including people with experience with C#, C++, PHP and many more. We will consider grads with strong technical degrees.

How have your recruitment needs changed over time?

Our needs haven't really changed. We are always looking for exciting

individuals who can hit the ground running and want to help us push our products and technology forward in new and creative ways.

What opportunities are there for career progression?

There is always room for career growth, and it is done through proven performance within the business. If someone demonstrates that they have the ability to deliver success they'll rise in the business.

Can you describe some of the skills or personalities you look for?

The type of people we love to see are those that are smart, have the ability to get things done and are great at working with others. We want people who can come up with solutions to tough problems – we love it when

they are better than we are. If you believe you can make a real impact on a project, then you are the type of person we love to see.

Why should perspective employees choose a career in middleware?

It's really rewarding to see the biggest games and films in the world using the software and tools you developed.

Speaking from a NaturalMotion-specific point of view, it's also one of the few careers where you're not just helping in the creation of quality entertainment for millions across the world, you're also creating something that is completely unique and vital for the advancement of animation.

So people should get in touch?

If you're interested in a career at NaturalMotion, we'd love to hear from

you. We have job openings across a wide variety of disciplines and skillsets, so do take a few moments to browse the careers page over on our website.

www.naturalmotion.com



EA DICE

Stockholm, Sweden
www.dice.se

Battlefield maker DICE has stunning views from its Stockholm studio, which was voted Sweden's best looking office in 2011. Flushed steel and reflective surfaces surround its crew, whether at their desks, in the kitchen or taking time out for a beer.



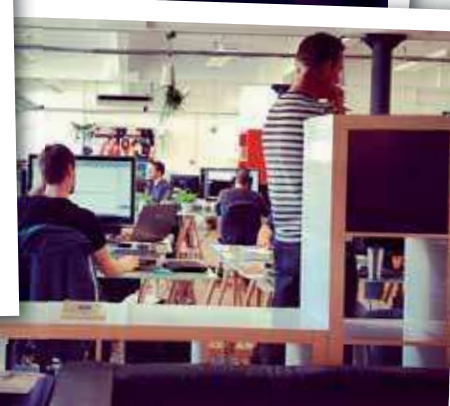
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Studio Gobo

Brighton, UK
www.studiogobo.com

With demon lanterns designed by Jamie Hewlett, Kidrobot figures and Studio Ghibli lithographs to name just a few of its displayed rare artefacts, this Brighton studio is the height of cool for a tribe that reveres an alternative persuasion.



SERVICES SPOTLIGHT

This month: **Salavas Sound**

SALAVAS SOUND'S METHOD is to treat games with the high-end production values 'that they deserve'.

Based in Glasgow, Salavas specialises in sound design, music composition and audio post-production. It creates in-game audio as well as the music for game cinematics and feature films.

Some of the studio's most recent work was on *Halo 4 – Spartans Ops*, for Axis Animation and 343 Industries.

"We approached this project like a sci-fi feature film," managing director Kahl Henderson tells *Develop*. "With over 50 minutes of content, we had a real opportunity to create an extension to the aural universe within the main *Halo 4* campaign."

There were many environments and characters that were unique to *Spartan Ops*, so Salavas created a large amount of sound effects from scratch.

Henderson continues: "The real challenge was being faithful to the franchise. We wanted our sound design to stand out, but it had to feel that it was part of *Halo 4*. The foley was an incredibly enjoyable part of this process. The question we had to ask ourselves was: How do you create the

sound of a 500lb bio-mechanical soldier? By using two beer pumps, a leather jacket, a metal belt, neoprene gloves, body armour, a canvas bag and a pair of hiking boots. Obviously."

Salavas delivered *Spartan Ops* in 12 languages, which is 120 unique mixes in 5.1 sound. "Every language has tonal differences, so every mix is subtly different," Henderson adds.

Salavas's facilities include a Dolby Premier mix theatre, a foley stage, ADR and dialogue recording facilities, sound design and music production studios and a vast custom sound effects library.

For linear cinematics and cutscenes, it uses Avid's Pro Tools as its primary sound design and mixing tool. A host of other tools, such as Wwise and Fmod, are employed dependent on the workflow and delivery requirements.

Before turning to plug-ins for audio shaping and processing, Salavas spends huge amounts of time on its foley stage manipulating props and playing with different types of microphones to produce unique sounds for each project.

"These sessions are essential during the early experimental development



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stages. Sometimes the most mundane prop can produce the most spectacular results, especially when recorded underwater using a hydrophone," says Henderson.

“Applying our background in movies to game audio takes the soundtrack and the video game experience to another level.”

Kahl Henderson, Savalas

To solve the problem of always needing plug-ins that don't exist for the products it uses, Salavas is now looking to build some audio creation tools of its own.

Finally, Henderson explains why Salavas is, he believes, the right choice for developers: "We are a dedicated, specialist audio facility. Our feature film background has given us a deep

and intuitive understanding of the use of sound to weave a narrative. We tell stories using sound.

"Applying this background in movies to game audio takes the soundtrack and the video game experience to another level."



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TOOLS SPOTLIGHT

This month: **IncrediBuild**

INCREDIBUILD AIMS TO provide a paradigm shift in code build acceleration. With its custom distributed computing and process virtualisation technology, the software transforms any network of PCs and servers into a virtual high-performance computer.

It takes a single process, breaks it into components, and executes them concurrently in parallel across multiple machines. The greater number of source files, the larger the improvement.

Founded in 2002 by Uri Mishol and Uri Shaham, the idea behind this technology was to use distributed computing for continuous analysis, development and monitoring.

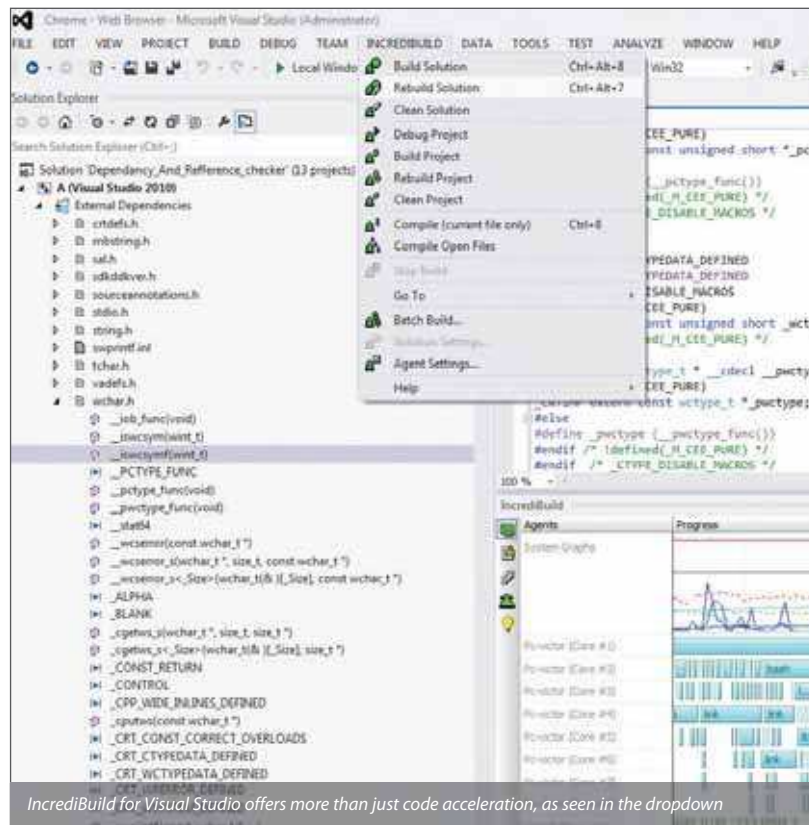
"IncrediBuild does not require any integration or API to be connected in order to work with it. For the code build acceleration, it is completely integrated with Microsoft Visual Studio and other build tools such as Make, GMake, Scons and many more," the firm's CEO Eyal Maor explains.

"IncrediBuild supports other common compilers such as Intel C++, Intel Fortran and Nvidia's CUDA. Any application can easily be configured

to accelerate its heavyweight compute intensive processes with a simple file configuration."

He continues: "One of the most interesting technological aspects of IncrediBuild is that you don't need to install anything on the remote machines except for an IncrediBuild lit agent. IncrediBuild's unique process virtualisation technology creates the environment the remotely executed process requires while the process is executing. Much like a virtual machine virtualises an entire machine in advance, IncrediBuild virtualises the environment the process requires on the fly, including input and output files, DLLs, registry information and more."

The tool itself is has been used in the development of *SimCity*, *FIFA*, *Halo*, *Grand Theft Auto*, *Pro Evolution Soccer*, *Need for Speed Most Wanted* and *The Sims*. Many Microsoft Studios titles for Xbox 360, as well as games for PS3 and the Nintendo Wii U, have made use of IncrediBuild. The firm is also cooperating with middleware providers who use its solution to accelerate their engines, such as



IncrediBuild for Visual Studio offers more than just code acceleration, as seen in the dropdown

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"The University of Hull consistently provides Criterion Games with high quality game programming graduates. Our 2012 intake, from Hull, were instrumental in building out several of the features in *Need for Speed Most Wanted*" Paul Ross, CTO, Criterion Games

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Crytek, Epic Games and others. Separate versions of IncrediBuild have been made to serve different toolsets. For instance, IncrediBuild for Visual Studio adds enhancements to the tool beyond just code acceleration. Once installed, an IncrediBuild toolbar and menu appear in the Microsoft Visual Studio dev environment, offering IncrediBuild's distributed Build, Rebuild and Batch Build operations. Build progress and results are displayed in the Build Monitor, a graphical improved version of Visual Studio's standard output window.

IncrediBuild for Make & Build is used to accelerate the code compilation process for popular build engines: Make, MSBuild, Gmake, VSimake, Jam, NAnt, Jom, Python, VsiMake, BJam, Jam+, SCons, ANT, GNU Make and more.

IncrediBuild for DevTools is a universal acceleration tool, speeding all processes in the Application Lifecycle Management (ALM) such as code analysis, QA scripts, unit testing, rendering, regression tests, compression, packaging and more. IncrediBuild executes any process you command on a remote machine, using

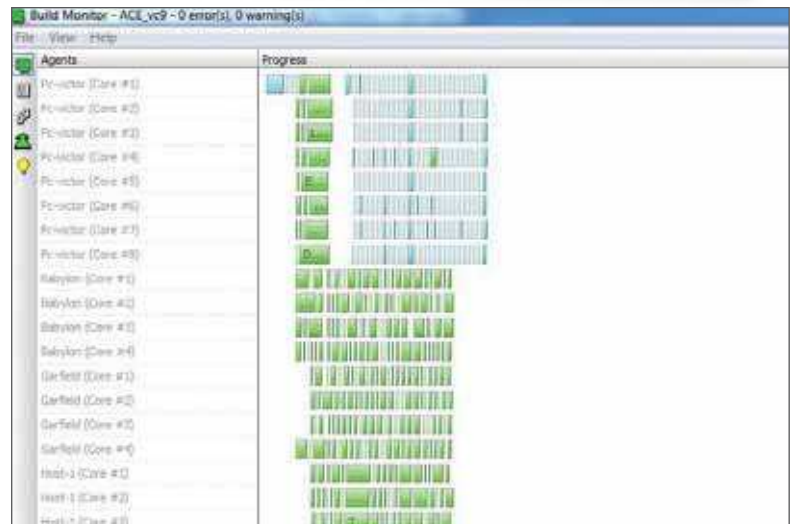
the environment of the initiating machine. QA and unit testing, for example, can run in parallel. Instead of eight tests simultaneously on a local machine, you can do one million tests on 1,000 machines.

“The faster the hardware gets, the faster IncrediBuild will go, so we’re always tracking new hardware.”

Eyal Maor, IncrediBuild

Furthermore, IncrediBuild can be used to accelerate independent processes by running them in parallel across unused CPUs in the network.

Finally, Maor says of the tool's future: “We’re always adding compatibility with new development tools and tasks within the ALM process. The faster the hardware gets, the faster IncrediBuild will go, so we’re always tracking new hardware developments.”



IncrediBuild hard at work, visualising where code acceleration can be bettered

TRAINING SPOTLIGHT

This month: **Confetti Institute of Creative Technologies**



A quartet of the Confetti Institute's aspiring games talent strike a proud pose at the establishment

THE TALENTED STUDENTS at this Nottingham institute have been rubbing shoulders with the games industry for several years, and now it has its own games course.

Confetti offers a professional working environment similar to a studio that is responsive to the needs of employers. It aims to bridge the gap between games education and industry, offering students opportunities to make industry connections. FDSC Games Technology has been running for two years, and Confetti's first set of graduates finished in July this year.

The institute offers degree courses in partnership with De Montfort University, which can provide a top-up year for students to achieve a BSc. Four modules run in parallel over the two-year course: Games Architecture, Games Development, Audio and Video for games and Games Industry. Students are introduced to a variety of areas of games production within the first year.

In year two, they work on creating an original game using custom assets. This process leads students to create an industry-ready portfolio with the emphasis on a specialist area or job role. Students produce portfolio work that aims to demonstrate their ability

in creating high quality 3D assets, audio and level designs.

Assignments include looking at how students can market themselves within the UK games industry, and business guidance on how to set up a budget and fund their own independent studio. Students also look at the theoretical side of game and level design to underpin their technical skills.

“The amount of contact with industry professionals gave me a lot of hope of achieving my dreams.”

Victoria Van Garretts, FDSC

Recent graduate Victoria Van Garretts had this to say about her time at Confetti: “I’m 29 years old and an avid lover of game design. I worked full-time in the energy industry for ten years before I decided I wanted to follow my dream of becoming a games designer three years ago. I started by completing my national diploma in interactive media and then applied to

complete my degree with Confetti and DMU. I visited several universities but after visiting Confetti my mind was made up almost instantly, Confetti was the only choice for me.

“The amount of contact that was promised with industry professionals gave me a lot of hope of achieving my dreams. The other universities offered more academic-based study, which in my mind was not going to give me the edge in the industry.

“Confetti certainly lives up to its promises and I have now got an amazing network of contacts who I can approach for industry knowledge as well as potentially putting my work out there. Confetti has given me the confidence to approach people I often believed out of my reach. I have made contacts within several triple-A companies as well as many amazing indie developers with the help of GameCity.

“Confetti has made my dreams come true. It might sound like PR cheese and smush, but this is truly how I feel. This place has changed my life. I aim high in everything I do now, and I encourage those around me to reach for their dreams, because I know now that anything is possible if you truly want it bad enough.”

Tools-wise Confetti gives students access to a host of industry-standard software, such as 3ds Max, Maya, Mudbox, Adobe Photoshop and Fmod.

The institute focuses on using the CryEngine when it comes to level design, and has a connection with Crytek UK – also based in Nottingham. Guest lecturers to the institute so far have included Crytek, Rockstar, Sumo Digital and Mike Bithell.

Confetti students have previously secured places at Blitz Games Academy open days, gained work experience at Crytek and won categories in the Nottingham Young Creative awards.

Course leader Rob Hoare says Confetti is a forward thinking organisation which aims to bridge the gap between games education and the wider industry.

He concludes: “Confetti’s FDSC Games Technology students are instilled with a professional attitude that carries through from the quality of their work to their interaction with industry professionals.

“We are quick to respond to the needs of the industry and as a result the content of the Games Technology course is constantly adapted to enhance students career opportunities.”

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Confetti's games course students strive to produce work of industry standard quality



Game design graduate Victoria Van Garretts



Confetti games course leader Rob Hoare



Work by students of Confetti's range of games development courses

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THE FAQ PAGE: CHRISTOFER SUNDBERG

Develop grills respected figures from the global games industry

Who are you and what do you do?

I am Christofer Sundberg, founder and chief creative officer at Avalanche Studios.

What are you working on right now?

The *Mad Max* game. And another really cool open-world game. And a really cool mobile/tablet game.

What was the first video game or product that you ever worked on in the industry?

I worked on the publishing side of the industry back in 1992, but the first game I worked on was *FIFA Soccer*. The first title I actually worked on though was *Just Cause*, as I wrote the original design and got the production team at Eidos excited enough about it to sign our newly founded studio to develop the game.

What was the first video game you ever played, and did you enjoy it?

One of the first games I remember playing was *Asterix* on the Atari 2600. I didn't know what to expect as I only had the comic book to refer to, and when it turned out to be a somewhat weird platformer I was disappointed. It actually made me walk out and kick my friend's neighbours' basement window in. No, I did not enjoy it.

What was the most recent video game you ever played, and did you enjoy it?

The most recent game I played was *The Last of Us* and I haven't finished it yet, but hell yes, I enjoy it. It's like God crawled into a console. Pure art.

What is your favourite game ever, and for what reason?

The two games that have completely ruined my otherwise quite active social-life are *Half-Life* and – get a load of this – *Conflict: Freespace*, played with an MS SideWinder Force Feedback Pro joystick.

How many hours a week do you spend playing video games?

Five-to-six hours, which is far from enough.

What area of the industry needs more 'investment'?

We need more innovation and focus on creating entertainment rather than funky business models. The cash will come with the success of great games, and not the other way around.

“ We need more innovation and focus on creating entertainment rather than funky business models. The cash will come with the success of great games. ”

What do you enjoy about the video games industry today?

The possibilities.

What disappoints you about the video games industry today?

Lack of focus and decisiveness. It's eating the industry alive.

Of all the games you have worked on, which has been your favourite to work on?

Just Cause of course; my baby.

What game that you were not involved with would you most liked to have worked on?

Half-Life.

What other video games developer do you most admire?

I've always been a huge fan of BioWare. Especially back in the Greg and Ray days. They are true pioneers and my heroes.

What hobbies, collections or interests do you have that are completely unrelated to video games?

Nike AF1's, Nike Air Jordan Retro's and cooking. I also have a collection of some really morbid things, including a mummified Doberman puppy and an eye-prosthesis.

What is your favourite book, movie, TV show and album of all time?

The Art of War by Sun Tzu. Just kidding. Cro-Mags' front-man John Joseph's amazing autobiography *Evolution of a Cro-Magnon*. Movie? *Cable Guy*. TV show? *The Sopranos*. Album? Kool G Rap & DJ Polo's *Live & Let Die*.




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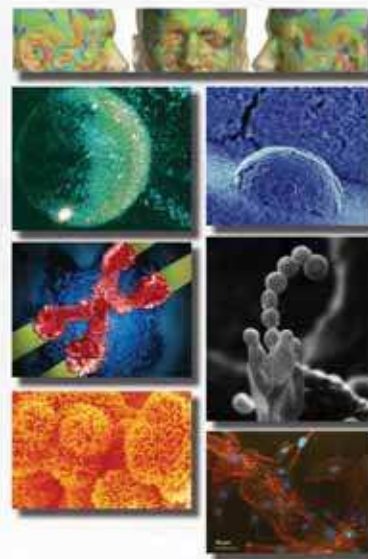
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